

In This Issue—Where Used Car Demand Exceeds Supply

MOTOR AGE

Vol. XLIX
Number 17

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CHICAGO, APRIL 29, 1926

Thirty-five Cents a Copy
Three Dollars a Year

A sensible winter production schedule has brought Jordan dealers into the spring selling season with demand just a few steps ahead of supply.

That means the elimination of ruinous trading—and a profit for the Jordan dealer.

Edward S. Jordan

President
Jordan Motor Car Company, Inc.
Cleveland

BLACK & DECKER Engine Kits

The Illustration shows the **UNIVERSAL KIT**, which contains an assortment as shown below and is suitable for about 95% of the cars, trucks and buses in use today.

PRICE
Black & Decker
Universal Engine Kit

\$68

1. Olive Green metal kit with lock and two keys.
2. Black & Decker Heavy-Duty Quarter-Inch Portable Electric Drill.
3. Chuck key for Electric Drill.
4. Bench holder for Electric Drill, for grinding tools and small parts and for cleaning carbon from valves.
5. Wire wheel brush for cleaning carbon from valves; also for removing rust, etc.
6. Three-inch grinding wheel for grinding tools and small parts.
- 7 and 8. Arbors for wire brush wheel and for three-inch grinding wheel.
9. Special grinding wheel for use in Electric Valve Refacer for refacing Valve Seat Grinding Stones.
- 10, 11 and 12. Three Arbor Hole Bushings for special grinding wheel mentioned above.
- 13, 14, 15, 16 and 17. Five different size 45 degree Valve Seat Grinding Stones (Diameters respectively $2\frac{1}{2}"$, $2\frac{1}{8}"$, $1\frac{7}{8}"$, $1\frac{3}{4}"$ and $1\frac{1}{2}"$).
- 18, 19 and 20. $\frac{5}{16}"$, $\frac{3}{8}"$ and $1\frac{1}{32}"$ pilots for Valve Seat Grinding Stones.
- 21 and 22. $\frac{5}{16}"$ and $\frac{3}{8}"$ Valve Guide Cleaners.
23. Carbon Removing Brush complete with holder.
24. Refill Carbon Removing Brush.

Your jobber can supply you.

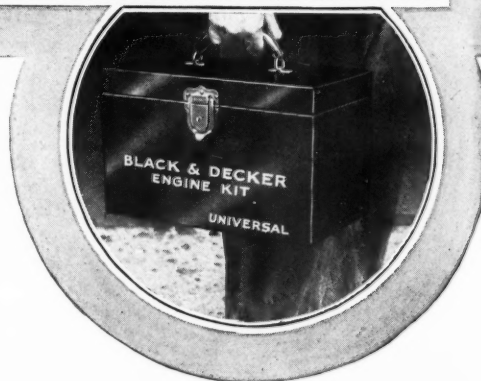
A high grade metal tool kit, with lock, containing the new Black & Decker Heavy-Duty Quarter-Inch Portable Electric Drill together with a complete assortment of Electric Drill Tools for cleaning carbon, valve reseating, and light grinding. There is plenty of room left so that you can carry an assortment of drill bits, so that the Quarter-Inch Electric Drill and everything that goes with it may be kept together under lock and key; and when you take your Black & Decker Engine Kit to a job you have everything together---no running back and forth.



SPECIAL KITS FOR FORD, CHEVROLET AND BUICK

- Black & Decker Engine Kit for Ford cars only \$60.
- Black & Decker Engine Kit for Chevrolet only \$63.
- Black & Decker Engine Kit for Buick only \$65

For complete description of these specialized Engine Kits write to
The Black & Decker Mfg. Co.
TOWSON, MARYLAND



CARBONLESS OIL ASHLAND AMBER OIL AMERICA'S ACCEPTABLE OIL

America's Finest and Purest Motor Oil

1,000 Miles on a Gallon of Oil

*Every Drop Carbonless—Every Drop a Genuine Lubricant
Every Drop Purified and Made Transparent*

SOLD TO YOU AS REPRESENTED

A GRADE FOR SUMMER—A GRADE FOR WINTER

Here Are a Few Reasons Why Our Oils Can Stand the Strain Better Than Any Oil on the Market Today:

BECAUSE

Ashland Oil is purified—It's not Mixed or compounded—it's FREE from all those mineral elements which so hasten the development of Carbon and heat the motor.

BECAUSE

Ashland Oil is thoroughly clarified—the most clarified oil on the market today. This gives remarkable lubricating properties, which mean greater MOTOR EFFICIENCY.

BECAUSE

Ashland Oil is so bright in color that the least particle of foreign material is easily detected and instantly removed. Mixed oils are dark in color. Ashland Oil is as transparent as glass.

BECAUSE

Ashland Oil is high in VISCOSITY and yet, not thick or gummy. This means greater efficiency, more mileage and lower maintenance cost.

BECAUSE

Ashland Oil is NOT put up in fancy cans with costly labels. All this expense is put into the quality of the oil. Therefore our GUARANTEE, carbonless oil, and

SATISFACTION OR MONEY REFUNDED

Thousands of motorists are using Ashland Carbonless Amber Oil (ask them) and will have no other brand. One can will convince you.

If you think or are in doubt that our oils can perform 1,000 miles on a gallon without adding, come in and we will show you the remains of our oil after having been used 1,100 miles by one of our customers.

| | |
|--------------------------------------------------|--------|
| Light Auto Oil, one 5-gallon can..... | \$3.60 |
| Medium Auto Oil, one 5-gallon can..... | \$3.65 |
| Medium Heavy Auto Oil, one 5-gallon can..... | \$3.70 |
| Heavy Auto Oil, one 5-gallon can..... | \$3.75 |
| 3 Five-Gallon Cans of Any Above Weights, \$10.50 | |

In 55-Gallon Steel Drums

| | | | |
|----------------------------------------|-----|---------------------------------|---------|
| Light Auto Oil, per gallon..... | 52c | Heavy Auto Oil, per gallon..... | 55c |
| Medium Auto Oil, per gallon..... | 53c | One 15-gallon drum..... | \$10.95 |
| Medium Heavy Auto Oil, per gallon..... | 54c | | |

In 30-Gal. Drums Add 10c per Gal. over 55-Gal. Drum Price

CUT OUT AND MAIL

Special Ford Non-Chatter Oil

| | | | |
|-------------------------------------|---------|-------------------------------------------|---------|
| One 5-gallon can..... | \$ 3.70 | In 30-gallon steel drums, per gallon..... | 62c |
| Three 5-gallon cans..... | \$10.50 | One 15-gallon drum..... | \$10.95 |
| In 55-gallon drums, per gallon..... | 52c | | |

Prices Above Include Cans and Drums. No Charge for Delivery in Chicago and Nearby Suburbs.

Out-of-town residents, we pay freight on 55-gallon drums only; buyer pays express charges on smaller orders. Checks or P. O. Money Orders must accompany all out-of-town orders. Shipment follows at once. Special reduction if you call for this oil.

Inquiries solicited from DEALERS

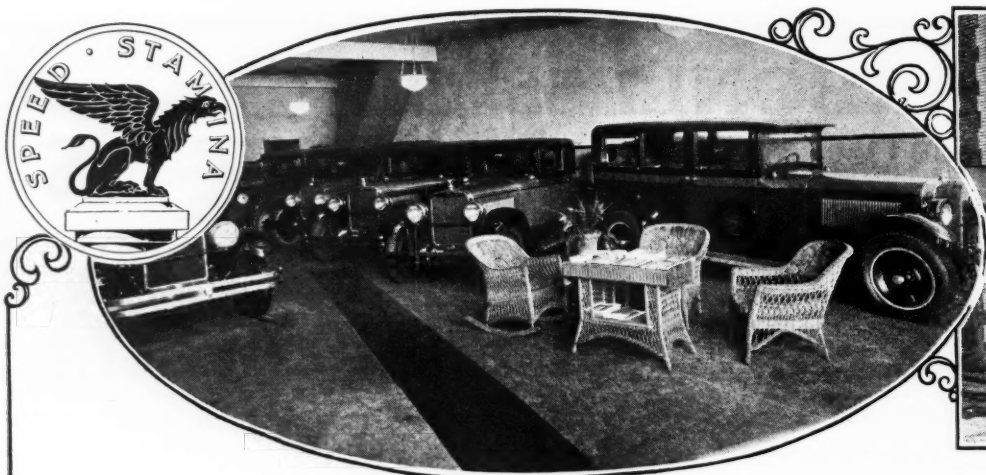
Ashland Oil & Supply Company

Carbonless Motor Oils

1747 North Ashland Avenue, Chicago

Phone: Armitage 2040

Open Sunday from 9 A. M. to 1 P. M. Week Days to 6:30 P. M.



Headquarters of
The Hertzog Motor Co., Inc.
Gardner Distributors at Buffalo, N. Y.

In Buffalo

Gardner passes 28 other makes in sales in 9 months!

The Hertzog Motor Co., Inc., Gardner distributors at Buffalo, N. Y., started with Gardner in March, 1925 — *from scratch!*

At that time, 42 other makes were represented in Erie County — and the March sales of each of the 42 exceeded those of Gardner. But that was *before* Hertzog got going with Gardner!

Now we have before us the total number of new cars registered in Erie County during December, 1925 — nine months after Hertzog got going with Gardner.

Gardner is 14th in sales! 28 other makes whose sales topped Gardner's in March trailed Gardner's in December! Of the 13 whose sales exceeded those of Gardner, only

two sell for anywhere near as much money as a Gardner — and both of these have been represented in Erie County by capable distributors for at least three years past.

All of which simply proves that Gardner is coming faster and faster — that the Gardner Six and Eight-in-line are *steadily rising higher and higher in public esteem* — that the whole Gardner proposition is made to order for distributors and dealers who want to get going and get going right.

Want the whole interesting story — including details of our Liberal Net Profit on Every Sale or Trade-in Policy? Then shoot us a letter or wire — *now!* We'll send you some facts and figures which will open your eyes to what *you* can do with Gardner.

THE GARDNER MOTOR CO., INC.
ST. LOUIS, U. S. A.

GARDNER

SIX & EIGHT-IN-LINE

GARDNER ASSURES YOU A LIBERAL NET PROFIT ON EVERY SALE

MOTOR AGE

Reg. U. S. Pat. Office

Vol. XLIX

No. 17

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Quick
At \$1.25
Retail**



Good Steady Profits

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Any Ford, Chevrolet or Overland owner prefers to screw a TASCO gasoline gauge in place of his filler-cap and read his gas at a glance rather than worry or measure.

And every TASCO gauge is

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Order Type "H" for the new Ford Touring, Roadster and Tudor; Type "C" for the Fordor.

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"41 Years in Business"

Akron, Ohio

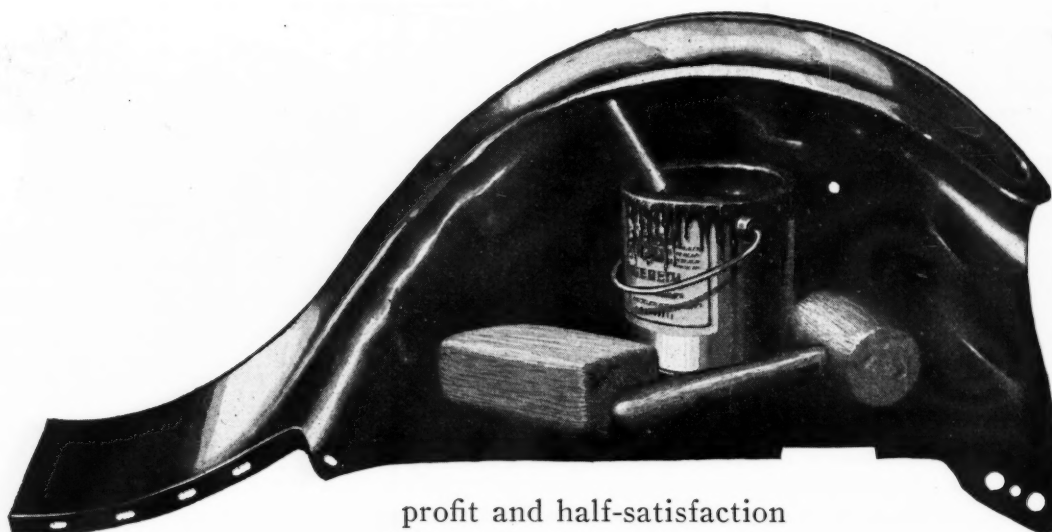
MAYDWELL & HARTZELL, INC.

Los Angeles

San Francisco

Pacific Coast Representatives

FORDS, CHEVROLETS and OVERLANDS



profit and half-satisfaction

or—



PROFIT and SATISFACTION

HAMMERING out dents in fenders is all work and little or no profit. And the fender looks just like what it is—a patched up job.

Re-fendering with Fostoria Fen-

MAIL THIS COUPON TODAY

Fostoria Pressed Steel Co.
Dept. B, Fostoria, Ohio

Gentlemen:

Please send Fostoria Wall Chart and advise name of my Fostoria Distributor.

Name.....

Address.....

City.....

State.....

If interested in the FOSTORIA LINE OF QUALITY PUMPS AND JACKS just put a check mark here.

ders is little or no work and practically all profit. And the car owner gets a perfect replica of his original fender.

That's why the FOSTORIA Plan is making money for its followers everywhere.

Write us today for the wall chart used in ordering. That's all you need to start in this profitable business. That, and the name of the Fostoria Distributor in your territory who is a good man to know.

Re-fendering the FOSTORIA Way

Fender smashed! Car owner drives to garage. Garage man phones Fostoria distributor. Distributor delivers fender. Garage man puts it on. Owner is delighted—his car looks new again.

Quick, easy, good looking job—nice, clean, satisfactory profit for both garage man and distributor.

THE FOSTORIA PRESSED STEEL CO.

FOSTORIA

Dept. B

OHIO

5 reasons why the Studebaker franchise grows more valuable every day.

1. *One-Profit Value*
2. *Unit-Built Construction*
3. *Always Kept Up-to-Date*
4. *Used Car Pledge*
5. *Lowest Time-Payment Rates*

THE Studebaker branches listed below are maintained to effect a closer cooperation between the maker and dealer than would be possible by direct communication with the factory.

Not only in the negotiation of a contract—but in many ways after the contract is signed—these Studebaker branches are planned, manned and located to give Studebaker dealers valuable assistance.

The Studebaker Corporation of America
South Bend, Indiana

To secure information on the Studebaker Franchise in your territory
communicate with your nearest branch

| | | | |
|-------------------------------------------------|------------------------------------------------------|----------------------------------------------------|-----------------------------------------------------------------------|
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STUTZ EXECUTIVES LINE UP WITH THE THOUSANDTH CAR

Standing in front of the car from the reader's left are Benjamin Twyman, Engineer Consultant; W. K. Swigert, Production Manager; President F. E. Moskovics and V.-Pres. E. S. Gorrell.

The 1000th NEW STUTZ was delivered to its owner before Easter

By F. E. Moskovics, President

STUTZ MOTOR CAR COMPANY OF AMERICA, Inc.
INDIANAPOLIS

I RECALL having once read a fable in which various female members of the animal kingdom were boasting of their respective abilities along the line of productivity.

It was Mrs. Rabbit, I believe, who was leading in numerical fecundity when the lioness was asked for her testimony.

And the lioness spoke as follows: "I produce but one young at a birth, but he is a full-blooded lion."

This remark, shifting the discussion from a quantity to a quality production basis, as it were, effectually silenced Mrs. Rabbit.

So, in announcing the completion of a thousand NEW STUTZ cars in the first three months of production, I realize that the figure, as an abstract one, is not particularly impressive—but I feel that it is a real achievement with an automobile so thoroughly unconventional in design.

And, as a matter of fact our shipments for

the last week of March and for the month of March were, respectively, the largest week's and the largest month's shipments in the history of this factory.

However, we are not resting on our oars, and we shall undoubtedly produce two thousand or more NEW STUTZ cars during the next three months.

To have our production line operating so efficiently at this date is especially gratifying to me because it means that Stutz dealers are making real, tangible, definite profits now.

And, in view of the public demand for The NEW STUTZ—unprecedented for a car of its price-class—and our rapidly increasing production rate, our dealer organization seems to have a highly profitable year ahead of it.

(Signed)

F. E. Moskovics



A Recent Demonstration

The feasibility of using the horseless wagon on mountain roads has lately been satisfactorily demonstrated in Colorado, where an autocart going over the Cheyenne pass, between Colorado Springs and Cripple Creek, reached its destination without an accident. The road is thirty miles long, and is practically a steady climb of the divide for one-third of the way up and a long descent the other two-thirds of the way. The road skirts along precipices and canons and has steep grades. The stage coach requires six

horses and makes the trip in eight hours. This gasoline autocart made the trip in four hours, never stalled, and was easily controlled going down. The motorman had never been over that road before. The danger of accident along precipitous places, such as frightened or stumbling horses, or harness breaking, was entirely removed. And yet this was the first wagon constructed by its designer. There is a great field for the horseless carriage in the West.

—The Automobile
October 3, 1899

Gasoline Autocart Well Handled by the Motorman

Where the designer's "first wagon" startled the natives in 1899, thousands of "autocarts" pass today, hustling to the next hotel, tourists' camp, or business appointment. Where "frightened, stumbling" horses trod so perilously with the stage coach, modern swift, sleek, rubber-tired pullmans glide. And on untiring trucks merchandise goes over the divide.

Of all the makes of motor cars that pass, more than 83% are equipped with Timken Tapered Roller Bearings. Of all the buses and trucks, more than 95% are Timken-equipped!

Timken Bearings, as much as anything, have made you a market represented by some 20,000,000 motor vehicles in the United States today, and by millions of people who know that they too, can have a car some day.

For Timken Bearings and Timken policy, as you know, have been potent in making motor vehicles as good as they are; as economical; and as easy to care for.

"Timken-equipped" has meant much to dealers. It means much to your prospects. Millions of pages of Timken advertising back you up when you say it.

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

TIMKEN

Tapered

ROLLER BEARINGS



Making More Quality Bearings!

THE big plant of The Bock Bearing Company, occupying 7 acres of ground at Toledo, is working at full capacity turning out *quality* taper roller bearings at the rate of nearly 2,000,000 a year.

The addition of several batteries

of improved automatic machines has enabled Bock to catch up with the increasing demand for better bearings, and still adhere strictly to the Bock principle of—

*Not how many bearings per minute,
But how many miles per bearing.*

THE BOCK BEARING COMPANY, TOLEDO, OHIO
Members National Standard Parts Association

B O C K
TAPER ROLLER BEARINGS

C H I C A G O , A P R I L 2 9 , 1 9 2 6 .

Our Next Issue

*Facts, Figures and Practical Business Building
Ideas Will Fill Big Number Devoted to America's
\$7,000,000,000 Retail Automotive Market*

To All MOTOR AGE Readers:

I WANT a few minutes of your time to tell you something about the next issue of MOTOR AGE.

It will be our second big special Sales and Service Reference Number and I can tell you that it will be almost 100 per cent bigger and better than the first one that was published a year ago. For that reason I am sure you will not want to miss it.

In a sense every issue of MOTOR AGE is a sales and service reference number, for our sole purpose is the improvement of merchandising and maintenance conditions with consequently greater profit for our subscribers. But this issue is a special one in the sense that we have gathered together in it a vast amount of practical, helpful information that the progressive automotive merchant will want to refer to many times every month.

Our flat rate expert and technical editor, B. M. Ikert, has spent months studying and comparing the latest developments in the standardization of service prices and has compiled a new Flat Rate Manual that will be published as a special section of this issue. In this manual suggested prices for something like 10,000 service operations will be listed. But the method of listing is so simple that any desired operation on any make of car can be quickly found.

Several hundred successful dealers have told Clarence Phillips about the serious mistakes they made in their early days which prevented them making the profits they should have made. With this information to start from Mr. Phillips has prepared a series of articles on "Launching a Dealership," and the first article of the series will be published in our next issue. Dealers who are willing to learn from the mistakes others have made and corrected will find this series very valuable.

Statistics are usually dry, but in the Sales and Service Reference Number we will present registration and production figures, and much other data, in a way that applies directly to every dealer's business.

For weeks we have been gathering from all corners of the country ideas and plans that have been used by dealers to build up their businesses. We have picked out 100 of the best of these plans for publication in our next issue. These will be equally divided as to new cars, used cars, accessories and supplies, and maintenance service. Many of them will be illustrated.

A. H. Packer has prepared a very comprehensive article on servicing timing chains. This article answers many questions that are often asked by service men regarding all makes of cars using front end chain drive.

The features that I have mentioned here are only a few of those that will be published in our big Sales and Service Reference Number next week.

I hope you will like it.

Yours very truly,

Sam Shelton

Editor

Dealer Has 500 Steady

THIS general automotive service station in California finds that tires are its greatest single producer of profits. It turns over its \$10,000 stock on the average of once every two and a half months. The proprietors can count up 500 steady customers who depend upon them for new tires and tire service.

*California Service Station
Repairs Their Old Ones,
ness in General Re
and Sale of Gas*

By ROY

THERE'S always an interesting story where success is found to follow failure.

Many are the instances in almost every community of one man or group of men building up a prosperous business in the same location, with the same competition and the same amount of potential trade, where others were forced to give up after an unsuccessful attempt to attract a sufficient volume of profitable patronage to make ends meet.

Invariably the answer is found in the difference between "Men and Their Methods."

In Santa Barbara, Southern California city of 32,000 people, Z. F. Knapp and L. W. Abbott took over a service station in May, 1922, to operate it for the creditors. Within a few months they purchased the business. They did not take hold of this failure with any robust sack of capital to play with. Their available resources were about exhausted when they made the first payment on the purchase price. But they did possess an appreciation of progressive business methods that would appeal to car owners, and by applying these methods they built up a trade that today represents about \$10,500 in gross volume monthly. As Knapp & Abbott never feature any cut prices on any of their merchandise or service, this volume brings in a full quota of reasonable net profits.

"What brought customers to your place when they failed to come under the old regime?"

"Well," replied Mr. Knapp, "let the old regime speak for itself, as I don't believe in saying anything disparaging about anybody, but what brings the first time customer to our establishment now is the 'come-on-in' appeal suggested in the attractiveness and cleanliness of our buildings and grounds. People are just naturally attracted to a clean, well-kept place. The service station that is pleasing to the eye as viewed from the street is its own best salesman.

Appearance a Big Factor

"Just as a well-dressed man inspires confidence, so does a well-dressed business establishment. Some merchants don't seem to think that there is an analogy here to apply to the automotive business, but I think that the kind of dress, or appearance, of an automotive establishment, is one of the principal elements determining its success or failure.

"We use a lot of paint around our place keeping everything clean and bright looking. Our buildings are painted white, and we don't let the elements or the scars of activity change this color. In the front triangular space of our lot we have planted some shrubbery and fixed up a lawn, which makes a very pleasing effect. Nearly every service station has some space that it could use to plant a few trees or shrubs, or to rig up a few flower boxes, and

if they would do it they would add greatly to the 'come-on-in' appeal as voiced in the appearance of their place.

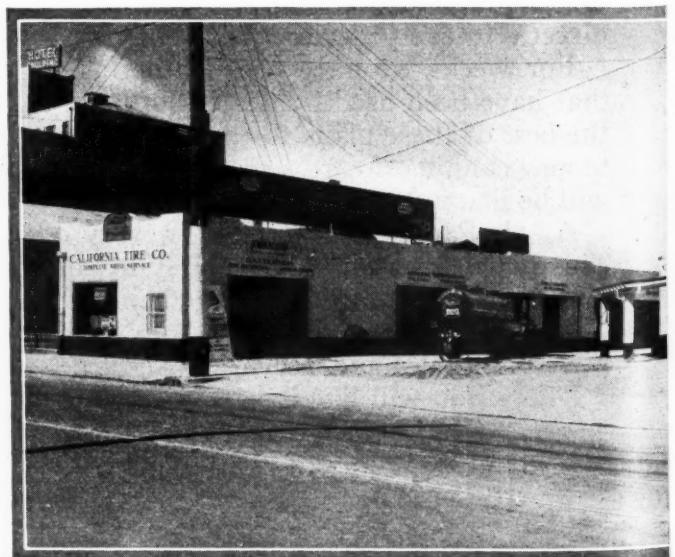
"In speaking of the sales appeal of things visible about a service station, I want to say something about equipment, particularly about pumps. It is my opinion that any service station operator who is keeping the old style blind pumps is overlooking a very potent business-building factor. There is never a day goes by but what several customers take occasion to remark that they like to get their gas from our visible pumps. The new style pumps, which permit the customer to see what he is getting, build confidence, and when you gain confidence you gain repeat business. An investment in good visible pumps is an investment that will yield mighty good returns.

From the three visible pumps at the Knapp & Abbott service station, an average of 800 gallons of gas are sold daily. Oil sales average one quart to every eight gallons of gas.

Every department of this Santa Barbara establishment, with the exception of the repair shop, is operated directly by Knapp & Abbott. The shop is leased to W. E. Cary, an experienced mechanic, and in accordance with the policy of the service station company he must guarantee all his work.

The tire department is the biggest single producer of profits, with a \$10,000 stock turned on an average of every two and a half months.

Service station of Knapp & Abbott at Santa Barbara, California



TIRE Customers

*Sells Them New Ones and
and Also Does Big Busi-
pairing, Lubricating
oline and Oil*

ALDEN

"We bring our tire lines and tire service facilities to the attention of every new customer coming on our lot," says Mr. Knapp. "In a tactful but vigorous fashion, we certainly 'Ask 'Em to Buy' on tires, and they do buy. We figured out the other day that we have a minimum of 500 steady customers who make all their purchases of tires and have all their tire repair work done by us. That's a pretty nice volume of steady business. And this figure does not include the drop-ins or the occasional buyers. We guarantee our new tires and our retreads and find it good policy to do so."

Knapp & Abbott do not employ any outside tire salesmen. Virtually all of their big tire volume is sold right on the lot. Every employe in every department helps to sell tires. When the grease man, the wash man or the battery man finishes a job, he takes note of the condition of the tires and if he sees any prospective business, he talks tires to the customer when he returns for his car.

An interesting feature from a business-building standpoint at the Santa Barbara service station is found in the location of the water and air lines. They are not found in a corner of the lot but right up against the center house on both sides under covered driveways. Mr. Knapp says that the closer you bring the customer to the points of merchandise or salable service delivery the better chance you have to sell the owner something after he has taken on free air and water. Incidentally, when a service man fills tires he is always on the alert to advise the customer as to his needs in the way of repairs or replacements.



There are three men employed in the tire shop, one on retreads, one on section work and one on vulcanizing. Jack Vaughan, is superintendent of the tire shop. The equipment includes six moulds that will take all sizes of tires, a device for spreading out casings, and the latest equipment for section and retread work. Knapp & Abbott give a 5,000 mile guarantee on their retreads. Used tires are accepted in trade on new tires at a figure that allows for a net profit in their resale. The amount of the allowance is not fixed by any set schedule of prices, but is largely determined by the stock on hand. If there is a surplus of a certain size in stock, a smaller allowance will be made, and if the stock is of normal proportions a higher allowance is given.

Retreading and Vulcanizing

The retreading and vulcanizing prices charged by the Santa Barbara firm are as follows: 30x3½ fabric casing, \$6.25; 30x3½ cord, \$7; 32x3½, fabric, \$8; 32x3½, cord, \$10; 31x4, cord, \$10.50; 32x4, cord, \$12; 33x4, \$12.50; 34x4, \$13; 32x4½, \$14; 33x4½, cord, \$14.50; 34x4½, cord, \$15; 35x4½, cord, \$16.50; 36x4½, cord, \$17.50; 33x5, cord, \$19; 35x5, \$20.50; 37x5, \$22. Sections are charged at the rate of \$1 per in. cross section. Surface patches, 75 cents and up. Cord boots, \$1.50 and up.

Free service is extended to all regular customers within the city limits of Santa Barbara.

Knapp & Abbott do an unusually good business in their oiling and greasing department. An average of twenty crankcases are drained daily and complete oil and grease jobs average about 10 a day. In a corner of each of the two pits there is a 54-gallon steel barrel, into which the drainings flow through a pipe extension, operating on a moveable elbow. On the end of this pipe there has been fastened a large funnel. The fact that the pipe can be swung easily to any position makes it impossible to reach the crankcase outlets and complete the draining in a minimum of time. This equipment was evolved and built by H. E. Clark, who is in charge of this department, and it has proven very practical. It also does away with the splashing of oil about the pit. When the barrels are full, they are lifted to the ground level by chain blocks. The old oil is sold to a Santa Barbara laundry which uses it for fuel oil.

Complete records are kept in the greasing department on all jobs turned out. The name and address of each owner is noted on a separate card, together with the date the car was last serviced and a description of the work done, whether a re-fill of the transmission and differential, or a complete job. Clark goes through his file every week and sends a list to the main office of the customers who have failed to return in a stated period. The office then sends out form letters in which the customer is advised that it is time to have his crankcase drained again and his car thoroughly greased.

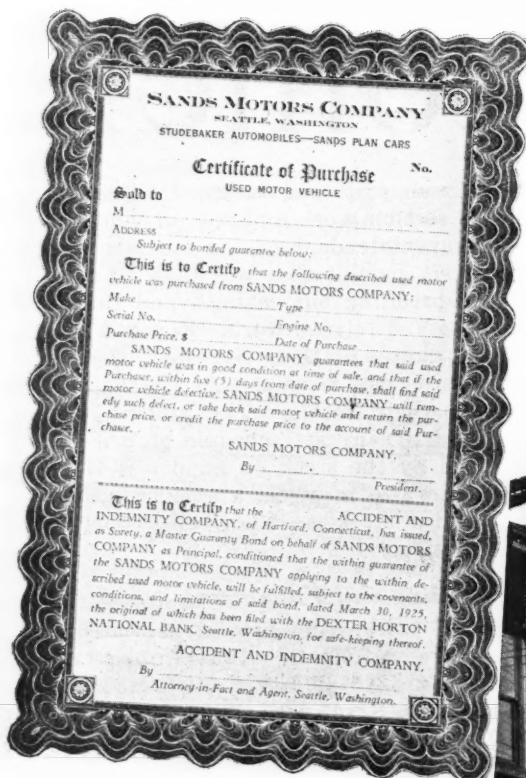
Adjoining the grease pits is the wash department, which has the very latest equipment for fast and efficient work. All hoses used by the wash men contain a double-acting faucet that will bring either hot or cold water. Hot water is used on the running gear after the dirt and grease have been loosened with a distillate spray. Two barrels are sunk in the cement floor in the wash depart-

(Continued on page 30)

Where Used Car

The Sands Plan Puts Each Car's History and Reconditioning Record in an Envelope, Together with an Indemnity Bond Guaranteeing Truth of All Statements

By MANDUS E. BRIDSTON



Above: Certificate of purchase protecting buyers of used cars handled by the Sands Motors Co., Seattle, Wash.

Right: Home of the Sands Motors Co., which uses truth as a selling argument in the disposal of its used cars

THE prevalent superstition that a trade-in car must of necessity involve mechanical troubles galore, is a fallacy, as every car dealer knows. He also knows that an automobile needs adjusting, tightening up and conditioning at periodic intervals, and then its unused mileage is just as valuable as in a new car.

The dealer's problem is to create public confidence by presenting these facts in a way that will attract public attention and carry conviction.

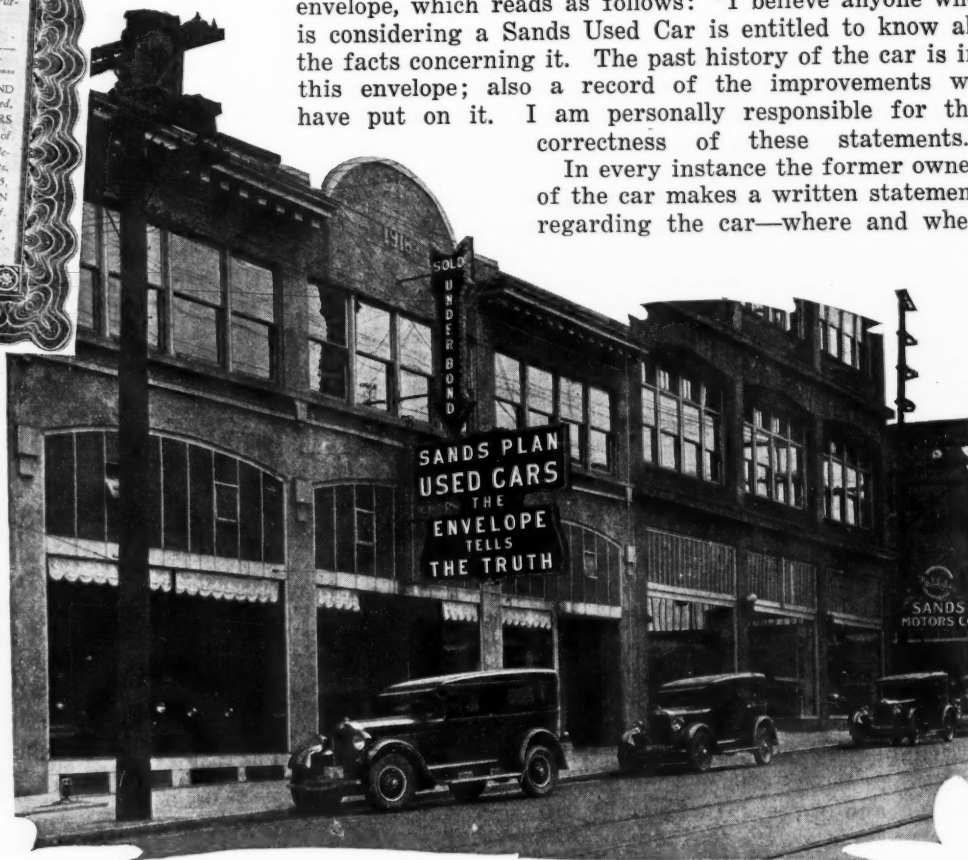
The Sands Motors Company, Studebaker dealer of Seattle, Wash., has succeeded in doing this with marked success.

A definite, practical plan has been worked out, known as the "Sands Plan—The Envelope Tells the Truth"; now so well known as to be virtually a trade-mark for the used cars sold by this dealer. Its chief virtue is its extreme simplicity, and its strong appeal is due to dramatizing or visualizing to the buyer all the known facts concerning the car.

When a used car is taken in by the Sands Motors Company, it is thoroughly reconditioned from stem to stern. The records of the shop work are kept in duplicate and the duplicates, showing every item of parts, material and labor used in overhauling the car, are put in a large envelope. Every bolt, nut, screw and cotter pin is listed. To this information is also added the past history of car—its former owner or owners, under what conditions it was used, mileage run, etc. P. E. Sands, president of the

firm, signs a statement printed on the outside of the envelope, which reads as follows: "I believe anyone who is considering a Sands Used Car is entitled to know all the facts concerning it. The past history of the car is in this envelope; also a record of the improvements we have put on it. I am personally responsible for the correctness of these statements."

In every instance the former owner of the car makes a written statement regarding the car—where and when



he bought it, in what service he used it, how many miles he ran it, and anything else he may choose to say regarding it. This signed statement goes into the envelope.

To further strengthen his case this dealer has arranged with one of the largest bonding companies in the country to back up the statements contained in the envelope, with an indemnity bond, which vouches for the accuracy of the facts related. Hence the slogan "The Envelope Tells the Truth and a Bond Insures the Truth." These cars are sold under the same 90-day guarantee as a new car.

The merits of the plan are best judged by results. When it was first inaugurated six years ago the Sands Motors Company did an annual gross business of \$250,000. Last year the volume aggregated \$2,553,000, the firm selling 1,981 cars, of which 1,131 were used cars. From January 1, to March 25, 1926, the firm had sold 232 used cars, an increase of about 62 per cent over the same period last year. This is a remarkable record for a city of only 375,000 population.

"Overcoming public prejudice against used cars, and 'selling' the idea of perfect frankness and truthfulness

Demand Exceeds Supply



P. E. SANDS

Who holds himself personally responsible for statements concerning used cars his company sells

DO NOT REMOVE UNTIL CAR IS SOLD

The ENVELOPE TELLS the TRUTH

| | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Used Car No. _____ | <p><i>I believe anyone who is considering a car should read the Sands used car envelope to know all the facts concerning it. The past history of this car is in this envelope also. I am personally responsible for the correctness of the statements of P. E. Sands.</i></p> |
| Make _____ | |
| Model _____ | |
| Motor _____ | |
| Serial _____ | |
| Checked by _____ | |
| <p>SANDS MOTORS CO. <small>1016-18 East Pike St. Phone, East 0991</small></p> <p style="font-weight: bold;">THE ENVELOPE TELLS THE TRUTH</p> | |

"Truth" envelope attached to each used car which gives its history and contains a record of improvements made

in dealing with used cars, has been no small job," Mr. Sands declared. "It was a matter of developing public confidence and faith, for an automobile is just a car to most people. To do this, newspaper advertisements have played a big part. Not freak advertisements of the ballyhoo type, but straightforward, sincere copy that tells the story simply and forcefully—and enough space to dominate a page in the newspaper. I am a firm believer

in the right kind of advertising. Also I am not afraid of a 'wordy' ad for if you have a real message, presented in an interesting manner, the people will read it.

"Winning the public confidence is the biggest factor in successful merchandising and if a merchant is sincerely jealous of his reputation and makes an honest effort to do the square thing on each and every occasion, no great effort need be expended in selling, for the public will BUY. Hence the major portion of our advertising has been devoted to building good-will, and impressing on the public that we really have taken the gamble out of the used car purchase.

"Many a man buys a new car because he is afraid to buy one that has been used, simply because he doesn't know the facts. He does know, however, that a good used car properly overhauled has not depreciated more than 10 to 15 per cent in actual intrinsic value, whereas its price has usually depreciated 35 to 50 per cent. Supplying the buyer with the facts insures him a real buy, and hence we find that the demand for used cars generally exceeds the supply—a rare situation, I'll admit.

Buy Used Cars Without Demonstration

"Many a time buyers come into our showroom and buy a used car without demonstration and often without even turning over the motor. It took persistent and conscientious effort to build a reputation that makes such things possible, but it's worth the candle—both in dollars and cents and in personal satisfaction.

"Automobile salesmen, to an extent, make friends of all the people to whom they sell, and experience has taught us that salesmen simply will not sell poor merchandise to their friends. Hence some dealers adopt the policy of not having new car salesmen sell used cars, but to have exclusive used car men who sell nothing else, whose business it is to sell the stuff, no matter how.

"We don't have any exclusive used car salesmen. All of our men sell our used cars. We select our cars so carefully, condition them so thoroughly, that the salesmen are sold on them and sell them enthusiastically to their friends. This would be impossible if we had not built the proper foundation for our used car department and if our cars were not right.

"Also we never put on any used car 'sales'. At certain times of the year, usually in the fall when business slacks and used stocks have accumulated, the 'huge, unprecedented, marvelous used car sales' begin. Red paint, yellow paint and green paint cover the windows. Page and half-page ads fill the newspapers; prices are 'slashed'. Some say they cut them to the bone; unusual terms and funny conditions are offered and the public is given a chance to bite if it will, and it usually does, to its sorrow. That's what brought havoc to the used car business. Sales are held in other lines of business but is it true or not that high class standard goods in season are never found in cut price sales? Job lots, bankrupt stocks, out of season merchandise, fag ends, remnants, etc., can be found, but it is my opinion that good automobiles will sell readily enough without resorting to such methods.

"We do not find it necessary to resort to any such frantic merchandising gymnastics, but rather we rely on the gradual upbuilding of our used car business by the methods I have outlined, so that our output in this department continues normal, with satisfactory used car selling."

Getting More for

*Exchange Operated by Seven Dealers
at Tarrytown, N. Y., Proves Its
Value in One Year by Selling
More Automobiles and Get-
ting Higher Prices Than
Under Individual System*

COOPERATION among dealers in working out a solution of the used car problem in a given locality through an adequate exchange plan plus sound management of the business under that plan—that is the achievement of the Lower Hudson Valley Dealers Used Car Exchange, Inc., of Tarrytown, N. Y.

Under the management of Frederick A. Russell the seven dealer members handling the Buick, Chevrolet, Chrysler, Cleveland, Hudson, Essex, Overland, Willys-Knight and Studebaker lines in a single year of the Exchange's operation have accomplished net savings in handling used cars sufficient to cause at least three of these dealers to assert that if the Exchange should go out of business today they would immediately give up their franchises.

In 1924, before the Exchange was organized, these seven dealers sold 184 used cars for a gross volume of about \$67,000, or an average of \$364.13 per car.

In the year since the organization of the Exchange under the Noyes-New London plan these same dealers through that cooperative medium have sold 276 used cars for a gross volume of about \$110,000, or an average of \$398.55 per car.

Although the first year's business showed a net loss of \$6,400, the number of cars sold increased 92, or 50 per cent, gross sales volume increased \$43,000 or 64 per cent and average per car increased \$34.20 or a little more than 10 per cent.

Manager Russell says that the same dealers in 1924, without benefit of the Exchange, suffered a net used car loss of \$40,000 compared with the \$6,400 net loss under the Exchange's first year. One dealer in 1924 paid or allowed \$28,000 for used cars and sold them for \$20,000, a loss of \$8,000, representing actually a cut price to that extent on his new car sales. Bankers, through the territory covered by the Exchange, report that the dealer members are in stronger financial condition than ever before.

Put Business on Sound Basis

"It was only after a most exhaustive study of the used car problem," says Mr. Russell, "and an expenditure of much time and money that the dealers undertook to put their used car business in this territory on a sound and equitable basis, to the ultimate benefit of all concerned.

"The Exchange was formed to perform a public service. The most conclusive proof that such a service has been performed is the fact that since the opening of the Exchange on March 7, 1925, it has merchandised 276 used cars, and at a net loss. This means that either the seller of those used cars has received a little more than market value for them or that the buyer has received more than



FREDERICK A. RUSSELL

Manager Lower Hudson Valley Used Car Exchange

dollar for dollar value. In either case the public has benefited. We have every confidence that with continued careful management the Exchange will eventually become self-sustaining and show a net profit.

"The crux of the whole used car problem, of course, is the unfortunate fact that dealers do not handle used cars on the same sound business basis which they follow in their new car sales. They are so desirous of making new car sales that too often they forget that honest values, reputation and confidence are as necessary to sound used car business methods as to sound new car business methods. At a time when such a large percentage of new car sales involve trade-ins there are too many dealers who cut their new car prices by allowing more for a used car than they know it to be worth in terms of what they know they can sell it for.

"Honest value is the keynote of this Exchange. Our appraisals are based upon the actual value of the car plus the cost of its reconditioning, plus a thorough knowledge of the market in our territory. And a most important feature is the fact that we have absolutely one price for everybody. After the appraisal has been made and the price fixed the car cannot be bought by anyone for more or less than that price. All this builds confidence in the Exchange, the surety that the used cars handled by our dealers through the Exchange are not handled on any

Used Cars

By LESLIE H. ALLEN

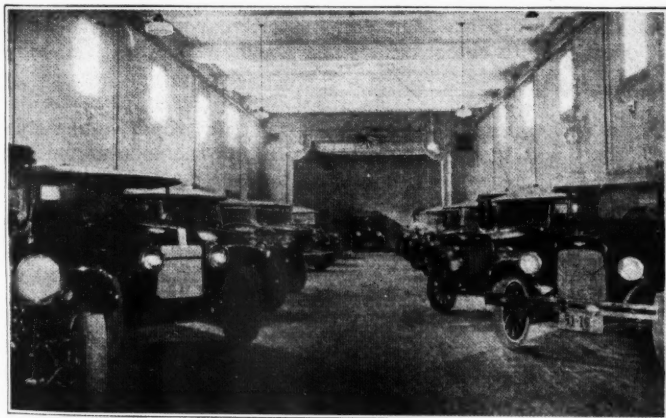
hit-or-miss basis; and this confidence kills the hidden fear that somebody else can get a lower price on the car.

"The used car itself is not handled by our dealers. The new car prospect is told that he must take his trade-in to the Exchange. If he is satisfied that our appraisal represents fair market value, the Exchange immediately buys the car, paying him in the form of a certificate which is redeemable, at face value, the same as cash, toward the purchase of a new car from any one of our dealers, or on account of any other used car the Exchange may have for sale.

"The only drawback to this arrangement is the possibility that some one of our dealers, in order to make the new car sale, may offer the holder more than the face value of the certificate. But this is only a possibility and not a probability, particularly because it is part of the manager's privileges to create and foster such good fellowship among the dealer members that they will not be inclined to over-bid on certificates.

Right of Appeal Provided

"It is possible, of course, that the dealer particularly concerned may object to our appraisal of the used car, in which case he may appeal to the Exchange directors, including all the dealer members. On such appeals the directors themselves examine the car and in the further light of market conditions at the time decide whether the appraisal by the Exchange was fair. Confidence in the business acumen of the Exchange management should be



Seven dealers sell their used cars through this co-operative display more advantageously than they did individually

such that such appeals would not be necessary, and I am happy to say that so far not a single appeal has been made from our original appraisals.

"At the height of a selling season our appraisal price usually stands only for a reasonably short time, but we are obliged to reserve the right to rescind the price without notice because this is necessary to protect us against a sudden change in the market or added wear and tear to the car.

"In an honest endeavor to cut down our overhead and pass that gain along, divided between the man who trades in and the used car buyer, we sell our cars from the floor subject to a 'satisfactory demonstration by appointment, or deposit refunded.' After the prospect has carefully in-

spected the car, as to make, type, etc., in fact everything that can be seen with the eye, there remains just one question: 'Is it in good mechanical condition and will it demonstrate satisfactorily?'

"It is, therefore, only fair and sound business to ask the prospect to sign a contract and put up a small cash deposit, subject to a return of the deposit if the demonstration is not entirely to his satisfaction. Due to our freedom of returning deposits without any quibbling, if a prospect is not satisfied, we have brought it about in this territory in one year that it is not very difficult to sell the idea of such a demonstration as against the old policy, even now pursued by most individual dealers, to eliminate promiscuous demonstrating, the cost of which mounts high, although the average individual dealer has no record of such costs and, therefore, does not realize what it actually amounts to.

"In order to create a confidence with the buying public to encourage their buying by making a deposit subject to a demonstration, I have gone so far as to instruct my salesmen that if a prospect is not satisfied with his demonstration the deposit is returned immediately, BEFORE the salesman makes any attempt to show another car to his prospect. I have found that this creates a confidence which is steadily gaining ground, the result of which is that we encounter practically no sales resistance from our policy of no-demonstrating.

"I estimate that our overhead saving in no-demonstrating is at least \$3500, the biggest item of which would be the salary of an extra salesman or demonstrator. Promiscuous demonstrating would necessitate our adding one more man to our organization. The car washes alone would run \$700 to \$900 a year more, to say nothing of the incidental items of gasoline, oil, etc., and still another item is the labor item involved in jacking cars around and taking them off the floor and replacing.

Plan Advantageous to Buyer

"This covers one of the biggest items of saving under the Exchange plan. The second is advertising. It costs practically no more to advertise the combined used cars of seven dealers than it would to advertise the individual cars of any one dealer. The fact that the buyers have learned that they can find a large assortment of cars under one roof in the Exchange, saving the expense, time and annoyance of going around to seven different car dealers' garages to inspect their individual stocks, works out to the keen advantage of the used car buyer. The buyer is now able to inspect a large stock of cars in a clean, well lighted showroom, whereas, heretofore, most car dealers have not had the time or the room to so display their used cars. Tires were flat, batteries were down and ordinarily the prospect had to crawl over three or four cars to get a bird's-eye view of the car in which he might be interested. This was all changed by the Exchange idea and is much appreciated by the used car buyer. It goes a great way to break down sales resistance.

"Under our method cars are sent to their respective service stations to be reconditioned. For example, all Chevrolets taken in are sent to the Chevrolet dealer to be reconditioned. This means maximum efficiency at mini-

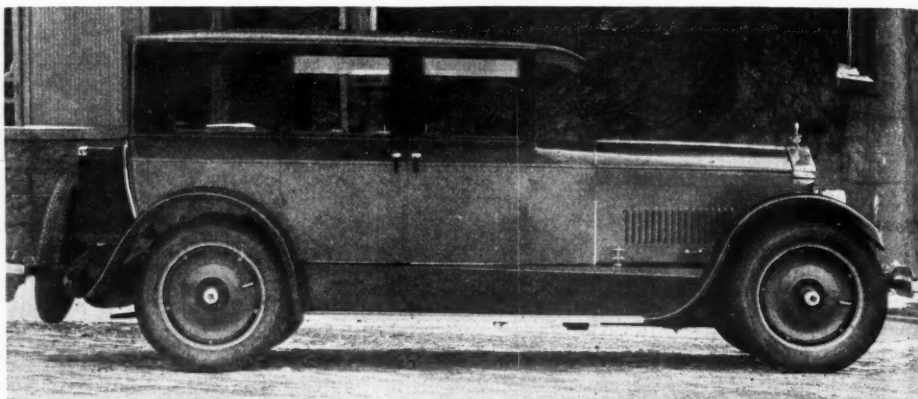
(Continued on page 30)

Roamer Adds New Eight Cylinder Sedan at \$1985

TO the existing line of four, six and eight cylinder cars, the Roamer Motor Car Co. (Canada), Limited, has added a new and more powerful chassis on which two body models, a 5-passenger sedan and 4-passenger coupe, listing at \$1,985, are offered. Standard units are used throughout in the construction of the new Roamer model and such features as Lockheed hydraulic four-wheel brakes, 33 by 6.00 in. balloon tires and a wide range of de luxe equipment are included in the price f. o. b., Kalamazoo, Mich.

A Lycoming $3\frac{1}{4}$ by $4\frac{1}{4}$ in. "L" head engine of 33.80 N. A. C. C. horse power rating and embodying a 5 bearing crankshaft, cast iron pistons, and Link-Belt front end drive is employed. Generator, ignition and starter are separate and of Auto-Lite manufacture with the battery a 6 volt Presto-Lite. The carburetor is of Schebler make with fuel delivered from a rear tank by the vacuum system.

Both clutch and transmission are formed in unit with the engine, the former being a single plate Borg and Beck and the latter of Durston make with three speeds forward. Drive to the rear axle is through two metal type Mechanics universal joints and a tubular propeller shaft. The axle is of the $\frac{3}{4}$ floating type with spiral drive and of Salisbury make. Propulsion and drive



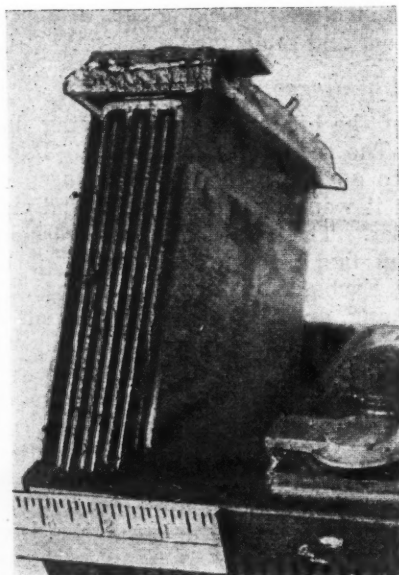
The new Roamer four door sedan listing at \$1985. It is powered with an 88 h.p. Lycoming eight-in-line engine. Four wheel brakes and disk wheels are standard equipment

are taken through the springs and the gear ratio is 4.63 to 1. Service brakes are hydraulically operated on all four wheels with the hand brake connected to a drum on the front end of the propeller shaft.

The front axle is also of Salisbury make with the steering gear a Ross of the cam and lever type. Springs are semi-elliptics all around with those on the front being 36 by 2 in. and those on the rear 56 $\frac{1}{2}$ by 2 in. The shackles are of the conventional steel bolt type with the

chassis lubrication by means of a pressure gun. Ready for the road the complete car weighs 3,580 lbs. The wheelbase of the new model is 126 in.

Conventional wood construction with steel panels is constructed on both bodies. The interiors are upholstered in mohair and velour with the exterior in two tone lacquer. Standard equipment includes a one piece windshield, disk wheels, automatic windshield, motometer, heater, rear view mirror, traffic signal, and trunk with rack.



Little Batteries in Big Boxes

THE illustration here shown depicts a set of battery plates, the total thickness of which with separators is about two inches. They were taken from a cell which would have accommodated a

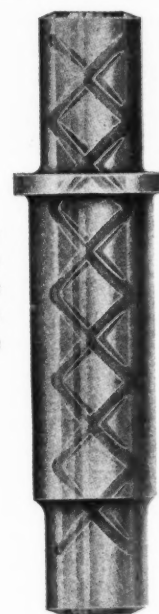
group of plates about three inches thick. In this way the whole battery was made about three inches longer than necessary. A test of the battery showed that it was only capable of delivering 75 ampere hours, although it was represented as having a capacity of 120 ampere hours.

Radio dealers and others engaged in honest business will welcome the exposure of such methods. A bulletin which gives in more detail the results of these investigations may be obtained from the National Better Business Bureau, 383 Madison Ave., New York, N. Y.

Randall Valve Guide for Replacement Trade

RANDALL valve guides which for several years have been sold exclusively for equipment purposes are now available for the replacement trade. They are made by the Randall Graphite Products Corp., Bound Brook, N. J., and distributed to the trade by John C. Hoof & Co., Chicago. The guides are made from close grained cast iron machined all over to insure a proper fit and are supplied graphite filled or plain. The graphite filled type supplies an effective means for lubricating this bushing in

spite of the heat developed, and reduces sticking to a minimum, it is stated. The graphite is held in helical grooves and is made flush with a bearing surface.



Randall valve guide showing the helical grooves filled flush to the bearing surface with graphite

Chromium Plate Used on Oldsmobile Radiator Shells

UNUSUAL durability and permanency of luster are achieved by a chromium plating process which is now being used at the plant of the Olds Motor Works at Lansing, Mich. Radiator shells have been finished by the new process for some time and its use is being widened to include bumper bars, starting crankshaft covers, radiator caps and filler necks, lamp lock rings, etc. Ultimately it is planned to apply chromium plating to practically all exposed parts of decorative nature. Exceptions to this policy will be door handles and similar parts which derive their luster from white metal compositions.

This new decorative finish requires no polishing but is returned to its original luster by mere washing. This characteristic is a product of the unusual hardness and resistive properties of the final chromium plating. In fact, the bright high luster is obtained without the necessity of a buffing operation after the plate has been applied by an electrolytic process at the plant. When the radiator shell or other part has been withdrawn from the plating bath, only a rinsing-in operation in cold water is applied to remove the plating solution.

While the desirable properties of chromium plating have been recognized for many years, the problem of industrial application seemed almost insurmountable and it was only about a year ago that W. M. Phillips of the General Motors advisory staff succeeded in bringing the process within the range of commercial possibility. Although the process is electrolytic, much of previously accepted practice had to be discarded before tangible commercial results were obtained. Chromium plating solutions are of a much greater concentration than those used for any other form of electroplating and the density or amperage of the electric current is many times the 20 amps. which is common for copper and nickel plating in present day automotive work.

At first glance it would seem that the new process is more expensive than straight nickel plating. But when the slight thickness of the chrome film is considered and balanced against the elimination of the buffing operation between copper and nickel plating and the absence of the final buffing operation, the total cost at the present time is less than that of the older process. This cost is based on a production of slightly more than 300 radiator shells per day. With the broader application of the process to all other decorative parts having a steel base, a further reduction in the cost of operation is not at all unlikely.

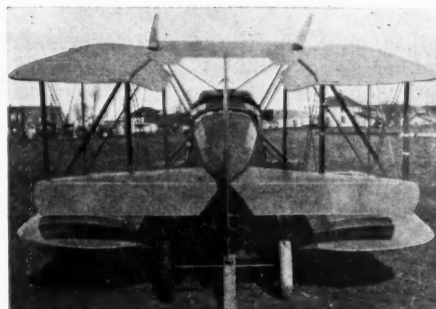


Chromium plating battery comprises electrolytic cleaning, cold water rinsing and chromic acid tanks. Unbuffed finished shells shown in foreground

An Airplane with Folding Wings

TWO views are shown here of new Verville-Airster airplanes being manufactured in Detroit by Buhl-Verville Aircraft Co. This is a fairly small biplane of the conventional type and when fitted with a 90 h.p. Curtiss OX-5 engine is capable of a speed of 95 m.p.h. For greater speed and longer range it may be fitted, without any change in structure, with other more powerful engines including the Wright 200 h.p. air cooled model, the Curtiss 160 C-6 or the 180 h.p. Hispano-Suiza. An unusual feature is that the wings may be easily folded back, as shown in one of the photographs, so the plane may be stored in

small space or towed through streets. With regular engine equipment these planes sell for \$5,000.



Rear view of Verville-Airster airplane showing wings folded



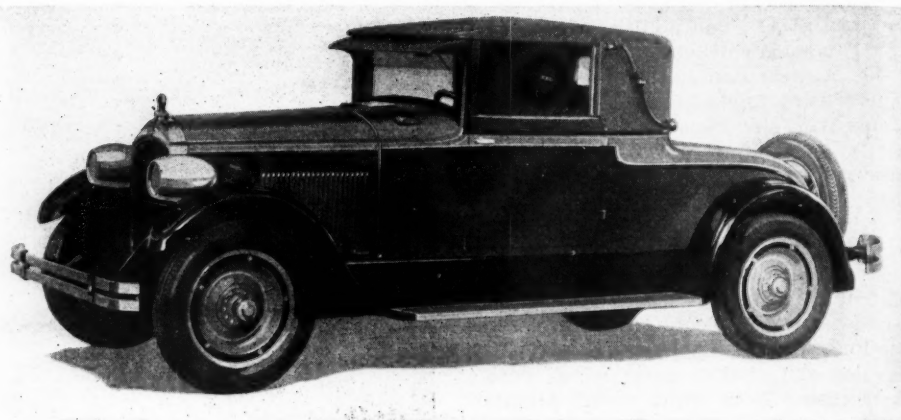
Side view of Verville-Airster airplane

Paige Offers Collapsible Top Cabriolet at \$2,295

STRIKING lines, colors and appointments embodied in the new Paige cabriolet listing at \$2295 make this new model the most distinctive of the cars manufactured by the Paige-Detroit Motor Car Co. As the tan colored top is collapsible and rumble seats are provided, the new car may be used as a roadster. The introduction of this model marks the first open car to be offered on the new Paige chassis.

Doors of this model are of the closed car type with the regulation window lifter. When the top is down the upper frame of the door folds flush across the window sill giving the appearance of a custom-built roadster. A sun visor is built integral with the frame supporting the one piece windshield and this arrangement insures a snug fit of the top and door frame when the car is used as a cabriolet. One person can convert the car from one type to the other in a few minutes and the rear deck can be opened from a latch inside the front compartment.

The interior upholstery including the



New Paige cabriolet which also can be used as a roadster inasmuch as the top is collapsible and rumble seats are provided

seats in the rear deck is in Spanish leather with a decorative design embossed in the surface while the interior hardwood trim has a unique inlaid design. Exterior colors are sea fog gray and ocean blue lacquer with the darker shade below the belt line. Nickered bul-

let type headlights to match the radiator and changes in the contour of the belt line give the car a pleasing appearance. Bumpers in the front with bumperettes at the rear, cowl lights, automatic windshield cleaner, stop light and rear view mirror are included in the equipment.

Rubber from Milk—

Firestone's Most Important Business Secret

"A man in a small town in Ohio claimed to have discovered a way to make rubber out of milk. I do not know why this man decided he could make rubber out of milk. Perhaps he had eaten some cheese which reminded him of rubber, or perhaps he thought the lead was a good one in selling stock to farmers. Anyhow, he convinced a man who had some stock in our company and this stockholder asked me to make an investigation.

"It was the kind of a request I could not refuse, but at the same time if it ever got out that I had seriously considered a scheme for turning milk into rubber I should never have heard the end of it!

"Every man in the rubber business would have probably presented me with a worn-out cow. 'Firestone Dairy Tires,' 'Milk-Fed Tires,' 'Tires from Contented Cows,' flashed through my mind. I was in a hole. I told Thomas, my chemist, what we were up against and that he had to go along.

"We did sneak out—not even our families knew where we were going. We found the inventor in a couple of rooms over a village store. One room was his secret chamber; in the other he had an ordinary churn with a lot of imposing electrical contraptions about it. We told him who we were and why we had come. He found that Thomas was a chemist.

"I won't make this rubber in front of a chemist," he said nervously. 'I've got a big thing here, and no chemist is going to steal it away from me.'

"That is up to you," I answered. 'Mr. X, who got us here, can do what he likes with his money, but the Firestone Company is not going to invest in your process without a report from its chemist. Just say the word and we will go home.'

"The inventor fidgeted nervously, but he stuck to his position. We started to leave. Then he said he would make a demonstration for us if we promised not to steal his secret. We promised.

"He asked us to stand where we were. Then he unlocked the door into the next room, went in, carefully closing the door after him, and in a few minutes came out with a big milk can, locked the door, and brought the can over to the churn. The can had in it what looked like milk. He poured it quickly into the churn and was as quickly closing it, when Thomas shoved his finger into the 'milk' and then smelt and tasted the finger. The inventor started to bluster. Thomas broke in on him:

"You have rubber dissolved in this milk. How's that?"

"It took only about five minutes to discover the whole game. The 'invention' consisted of dissolving rubber and pouring the mixture into a can of milk. By manipulation in the churn the rubber came out of solution, and we had rubber from milk!

"Our stockholder was all for jailing

the fraud, but I held him back—neither Thomas nor I wanted to get famous through discovering that rubber could not be made out of milk. The inventor saw a great light and took himself off. That we actually did go to see rubber made out of milk has been until now our most important business secret."—Harvey S. Firestone, in *SYSTEM*, the Magazine of Business, for December, 1925.

Wants Uniform Laws

To the Editor of *MOTOR AGE*:

As all states are trying to get some kind of regulation on automobile lights, why not ask Congress to pass some regulation that every state could copy? Thereby all motorists would know just what was expected in regard to lights, hand and mechanical signaling. Say in regard to lights that front lenses shall tip forward $\frac{1}{2}$ in. for 6 in. diameter lens, then those who don't care about anyone would have to obey or take the penalty which should be \$50 for first, \$100 for second, \$300 for third offense.

Also cure those crippled arms by using the signal so there is no doubt as to what the meaning is. Make the penalties good and strong so that one call on the doctor will be plenty. In regard to speed, any speed is safe as long as you can control your car to avoid accident. An accident is up to the driver, therefore make those penalties strong enough to command respect.

P. B. FITZPATRICK
435 Holmes Ave., Indianapolis, Ind.

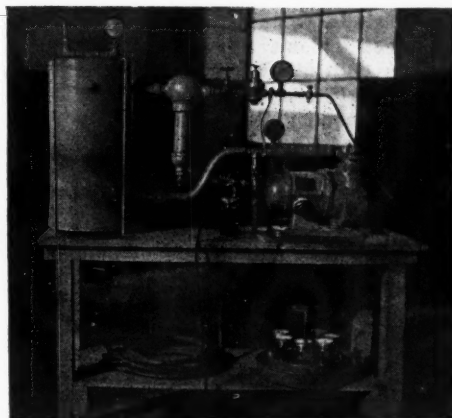
One Way to Handle The Touch-Up Job

RIGHT now particular interest is being shown in various kinds of equipment suitable for small shops or dealer establishments to touch up lacquer paint jobs.

There are, of course, on the market very efficient paint spraying systems suitable to paint shops, both large and small, but very often the point comes up as to how a bad spot in a car's finish can be touched up. This has resulted in various and often ingenious pieces of equipment evolved in the shops by the mechanics.

Occasionally a customer brings a car into the shop with a damaged hood, fender, body door, etc., which while it possibly can be straightened cannot always be made good-looking because no facilities are at hand for touching up the finish.

How one establishment, the LeMoyné Hudson-Essex Company, LeMoyné, Pa., has used to advantage a piece of equipment that had been discarded for some



Apparatus used by the LeMoyné Hudson-Essex Motor Company for touching up lacquer paint jobs

time in connection with refinish jobs is shown in the illustration.

In this case use is made of a Black

& Decker Lectroflator attached to a lacquer touch-up outfit made by the LeMoyné company. This Lectroflator was used for several years but as the shop grew and needed more air capacity it was put aside. Then came the time for a better and quicker way to finish damaged fenders after the enamel had been removed by filing. This shop knew what was needed but the cost of equipment being high the discarded Lectroflator was thought of. Then the shop got busy and set to work building the outfit shown in the picture.

This outfit is used considerably and maintains a pressure of 90 lbs. with a working pressure of 45 lbs. sufficient to work successfully with the DeVilbiss touch-up outfit. It will be noted that an attachment is provided for inflating tires which may have become deflated while body repairs are being made. A glance at the illustration will show the general make-up of the outfit.

An Accessory Decorated by Nature

THE decorative value of automotive accessories is well recognized as a selling point by successful dealers. Among accessories having unusually attractive decorative value are those made of onyx, including gear shift balls and radiator cap arm balls.

Information as to where this onyx gets its beautiful colorings and how it is worked into automotive accessories is supplied by the Kingsley-Miller Co., manufacturer of accessories in which onyx is used.

Onyx, or alabaster, as it was originally known, was one of the first of precious stones to be used for decorative purposes. In the Temple of the Sphinx in Egypt the walls and ceilings are lined with huge slabs of onyx in a perfect state of preservation. St. Mark's Cathedral in Venice contains two alabaster pillars from the Temple of Solomon.

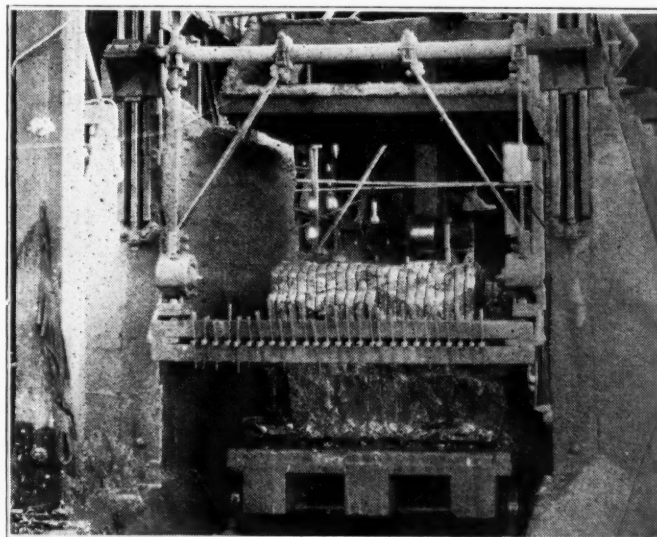
Onyx marble (not to be confused with ordinary marble) is a calcareous or limestone composition. It is found in certain valleys and canyons that were once the beds of spasmodic streams. These streams being fed from deep underground rose and fell at intervals, depositing their rich burdens of fine lime sediment. After many thousands of years these deposits attained considerable thickness. Then, by another process of nature, they were gradually hardened into a translucent marble. Before the

hardening process began, however, various other minerals and mineral salts were washed into the soft sediment. These gave it color blendings, ranging from the pure white of natural alabaster through the light and dark greens of copper salts and the brown, red and lavender tints of iron salts to the occasional suggestion of metallic gold tints.

Becoming dissatisfied with her handiwork, nature, after many thousands of years, caused earth disturbances to break the solid marble into a myriad of small pieces. She then cemented the pieces together again with other mineral salts. Many more ages were then required to complete the process and to give us onyx as we have it now.

A very careful selection of onyx at the quarries is made, and special quarrying is carried on to produce the beautiful and highly colored stone.

The manufacture of onyx balls involves many careful processes starting with the sawing of the rough pieces into



Sawing onyx into slabs to make gear shift and radiator cap arm balls

slabs, after which they are cemented together and sawed into strips. A third operation reduces the strips to cubes of proper size for gear shift balls and radiator caps. Some eight tons of these small blocks are sawed at one time on standard marble gang saws. To produce cubes of the correct size, this process requires ten days time; during the process there is a waste of some twenty to thirty per cent of the original stone. After the cubes are produced they are sorted out as to color, size and soundness, and are then ready to be turned into various size balls. This work is done on special machinery.

NEW ITEMS OF SHOP EQUIPMENT

New Electric Valve Grinder

VAN DORN Electric Tool Company, Cleveland, O., has developed an electric valve grinder in which it is possible to grind valves in all sizes of engines in fast time.

The design is such that the spindle not only progressively rotates, but also oscillates at the same time. The oscillating movement keeps a proper coating of grinding compound between the high spots on the two surfaces at all times. The progressive rotation of travel produces a longer lap to surface the high spots. The combination of these two movements, it is said, gives by far a better and quicker job than the oscillating movement alone.

The price is \$38 including spindle shaft with adjustable bit to fit valves and lift spring.

Model "30" Dial Indicator

A NEW Dial Indicator, which is graduated to read in ten thousandths of an inch is being manufactured by the Federal Products Corp., Providence, R. I. The dial as shown in the illustration is of the plus and minus type but it can also be furnished with a direct reading dial. Standard range is .020 in. or 2 complete revolutions of the hand. Where the indicator is used for comparative work only and extreme accuracy is not essential a range of .200 in. can be furnished, or 20 complete revolutions of the hand. The diameter of the indicator is

2 7/32 in. It is equipped with bezel clamp for locking the movable dial. The hole in the bracket is 3/16 in.

Goodell-Pratt Brake Lining Cutter

THIS machine, manufactured by the Goodell-Pratt Co., Greenfield, Mass., is designed to cut all widths and thicknesses of brake lining up to 6 in. wide by 1/2 in. thick. The leverage provided by the long handle is transmitted to the upper blade by means of a rack and pinion and transformed into a shearing motion by means of two cams. This cutter, known as No. 739, can also be used for cutting belting, shim material, etc., it is claimed. Iron parts are finished in red and black enamel while the steel parts are polished. Net weight, 33 lb. Price \$18.

Eagle Battery Charger

THE Eagle Charger Corp., 121 N. Eighth St., Philadelphia, manufacturers of the Eagle 16 battery gang chargers and the individual "A" and combination "A" and "B" radio battery charger have just announced a five battery gang charger constructed along the same lines as their other chargers. It is equipped with a magnetic control which permits the charger to be adapted to any voltage from 100 to 135. This eliminates the possibility of overloading and at the same time provides for the maximum rated output. This device is incorporated in each of the Eagle charg-

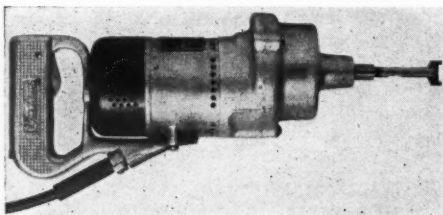
ers and they are all of transformer construction. The individual battery charger, 2 amp. rate, is priced at \$18; 6 amp. rate, \$28. The combination "A" and "D" charger lists at \$19.50 and the five and 16 battery gang chargers list at \$60 and \$100 respectively.

Adjustable Horse

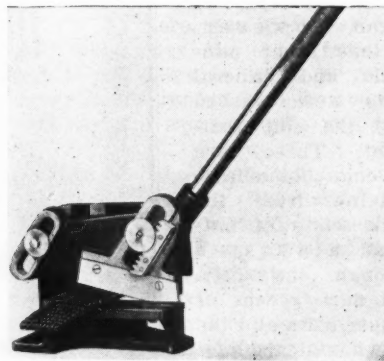
AN adjustable horse for paint shop, garage and service station, which replaces the usual wooden horse or blocking is being manufactured by the Garage Utilities Co., Hackensack, N. J. The base or pedestal is of two heavy steel plates die formed. The adjustable extension, sliding between the steel plates and the spacer bars is drop forged, 2 1/2 by 1/2 in., with a lateral carrier head or saddle 1 in. wide, 1 1/2 in. deep and 7 in. long and is provided with a positive drop to prevent its withdrawal from the pedestal. The pawl is also drop forged with the shoulders lapping the top of the base plates carrying the load without strain on the pawl bolt.

Rapid Spring Winder

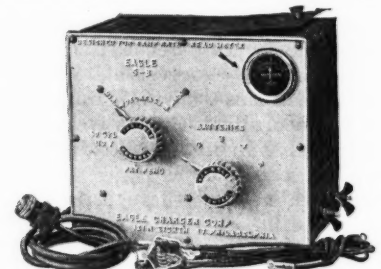
THE Rapid Spring Winder made by the Fostoria Screw Company, Fostoria, Ohio, is said to be very simple in operation. The size of the spring to be made is determined by the size of the mandrel used while the pitch or lead of the spring is determined by the position of a small cam which can be set into any position. Any desired pitch or lead can be used.



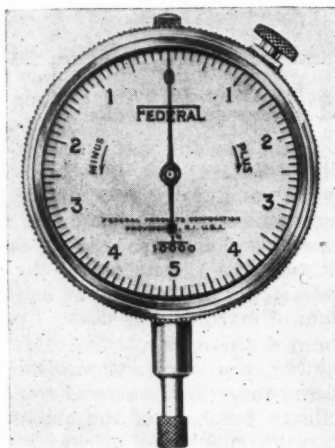
Van Dorn electric grinder which takes care of valves in all sizes of engines



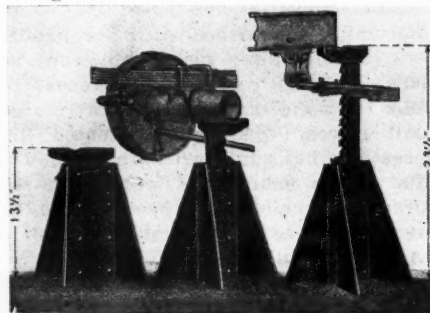
Goodell-Pratt brake lining cutter



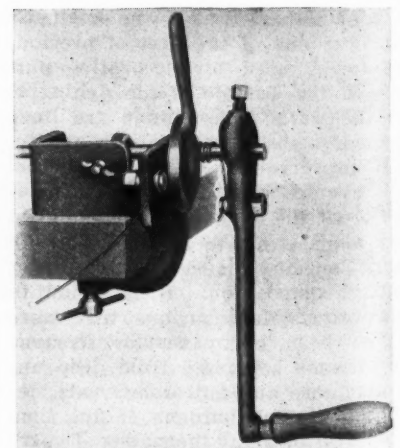
Eagle battery charger



New dial indicator graduated to read in ten-thousandths of an inch

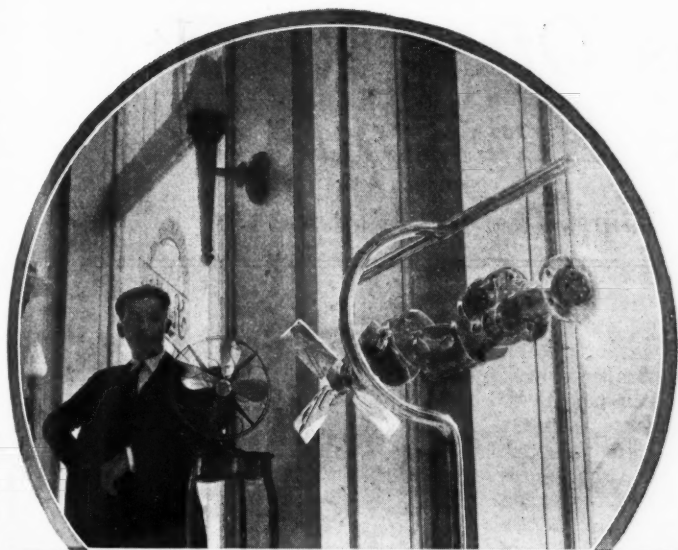


New adjustable horse to facilitate service station work



Rapid spring winder made by Fostoria Screw Co.

Unusual Stunts in Displays

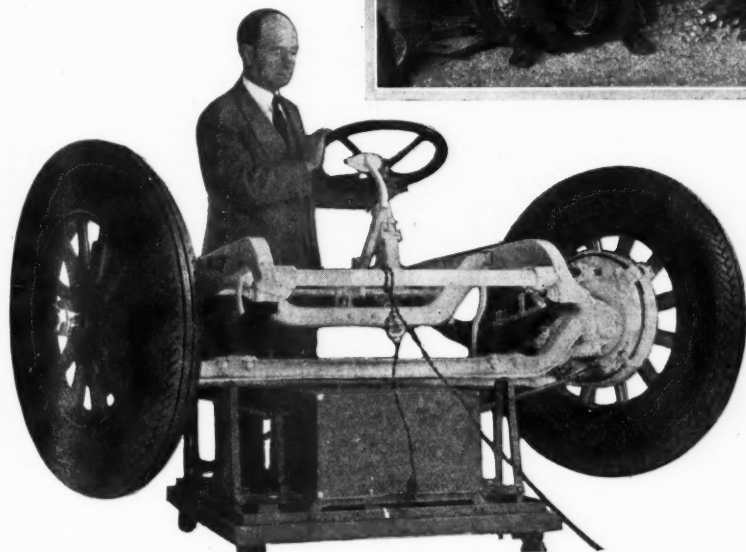
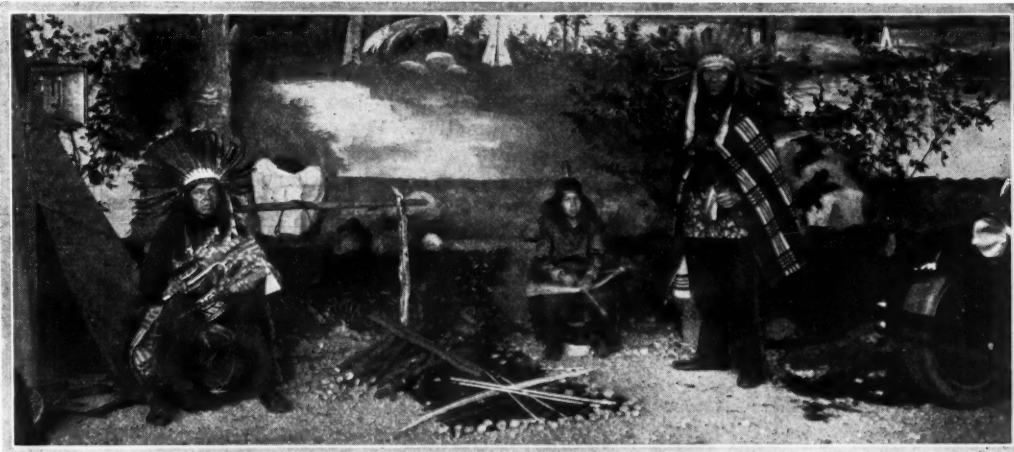


Left: In the sales room of the Chester N. Weaver Co., San Francisco, there is a nickel plated shaft, supported by two thin wires, which is kept revolving by a small electric fan directing its air against the fan attached to one end of the crankshaft. When in operation the electric fan is concealed from view. Thus the curiosity of passersby is aroused and they stop to look.



RURAL NECESSITIES. (Left) Eaton-McDiarmid Motors Co., New Orleans, recently staged a display of a motorized farm, containing a Ford sedan in front of the farm, also a Fordson with a trailer of logs behind, and another tractor in the woodlot apparently busy sawing wood. The house was equipped with electrical fixtures. In the exhibit Ford parts, numbering 61, were used wherever possible. The creation was the work of Mr. Rogge, shop superintendent.

EVERYBODY HAPPY. At the right are shown three full-blooded Chippewa Indians camped in the display rooms of the Richards-Oakland Co., General Motors Bldg., Detroit, during the first showing of the new Pontiac Six. Quite a contrast between this modern automotive creation and the war steeds of the braves of yesterday!



PORTABLE WHEEL TESTING DEVICE. (Left) Roy Douglas of the Howard Automobile Co., San Francisco, has devised a portable device for demonstrating the action of the front wheels when the brakes are applied to the front wheels on a curve. There are two electric motors which drive the wheels by friction. This type of drive does not permit of applying the brake very hard, but the demonstration is complete because when the brakes are applied they are held to that tension and then the front wheels turned in all directions.

Price Reductions Often Result of Flat Rate Revision

Edited By B. M. Ikert

Things That Help Flat Rate

Better Understanding of Flat Rate Causing Price Reductions

FLAT rate has undergone quite a bit of revision of late if we are to judge from the latest flat rate manuals published by some of the car manufacturers. Revision still is going on in many cases.

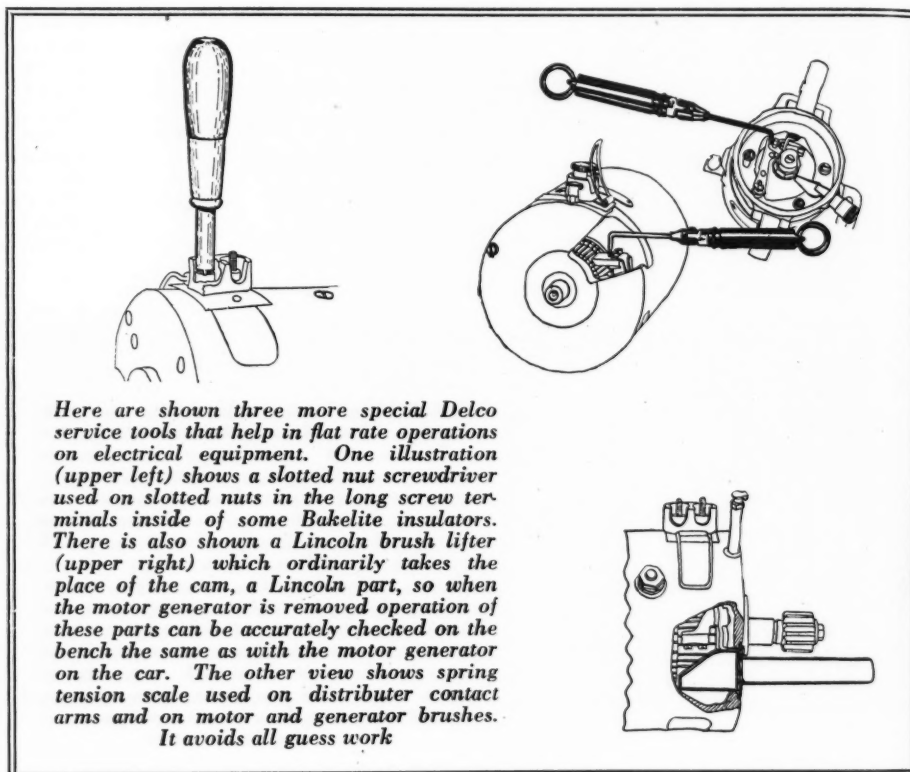
The one big point that stands out more prominently than any other thing in connection with this revision is that in nearly every case the prices for many of the operations have been reduced.

This might be taken to indicate that such prices were too high in the first place or it may mean that facilities are better for rendering maintenance by the dealer and service station. It probably is true that in some cases the price for certain operations was placed above what it could have been, but in such cases the dealer always had recourse to setting a price for which his particular shop could do the job profitably and which was commensurate with the work involved.

There is no doubt but what better design of cars, better accessibility, the piece work plan of paying mechanics, good shop equipment, and a better all around understanding and application of flat rate is largely responsible for the general trend in the reduction of flat rate prices for maintenance work. Such reduction is of benefit to both dealer and customer alike.

Take Care of the Mechanics

It is highly essential to have equipment that speeds up repair work and does the job more accurately and more



efficiently, but at the same time every shop should have equipment which while it may not be looked upon as productive, is protective. For example, it is a good plan to provide goggles for the mechanics when tools are being sharpened on emery wheels. Also make sure that all belts are concealed or properly enclosed with

guards. A chain falls is no stronger than the hook fastening above and therefore when a car is hoisted the weight should be taken off the chain falls by means of trestles. Also don't forget the protection for the car itself, that is the fender covers, seat covers, running board covers, etc. Very often considerable damage is done to a car through lack of this protective equipment. And it happens occasionally that the owner of a shops gets into a law suit from a mechanic having been injured in the shop.

FLAT RATES for Studebaker Clutch Operations on Big, Special and Light Models

Motor Age's Flat Rate Forum No. 62

| Manufacturers' Official Designation | Charge |
|------------------------------------------------------|---------|
| G-1 Install Clutch Shifter Bearing | \$13.83 |
| G-2 Install Clutch Facing | 11.97 |
| G-3 Install Clutch Facing and Shifter Bearing | 21.30 |
| G-4 Install Clutch Brake Arm Facing | 2.38 |
| G-5 Install Clutch Brake Spring | .51 |
| G-6 Install Clutch Brake Arm Facing and Spring | 3.19 |
| G-7 Install Clutch Brake Flange Disc | 7.77 |
| G-8 Install Clutch Driving Disc Outer Hub | 5.93 |
| G-9 Install Clutch Drive Shaft | 13.22 |
| G-10 Install Clutch Engaging Spring | 8.86 |
| G-11 Install Clutch Thrust Bearing Stud | 6.24 |
| G-12 Install Clutch Thrust Bearing | 9.14 |
| G-13 Install Clutch Shifter Shaft Fork | 4.57 |
| G-14 Install Clutch Shifter Shaft Lever | 3.83 |
| G-15 Install Clutch Driving Flange Complete | 17.37 |
| G-16 Install Clutch Friction Disc | 8.55 |
| G-17 Install Clutch Toggle Plate | 11.70 |
| G-18 Lubricate Clutch Drive Shaft and Flange | 7.60 |

Charging for the Small Job

The question often comes up as to how to charge for the small repair jobs or adjustments that require anywhere from 10 to 15 minutes to perform. Some shops have a minimum of 50 cents for such jobs. Others believe that doing such work free of charge has its advantages in building up good will and future business.

It is pretty hard to say exactly what should be done with these small jobs. On the one hand we have the dealer who, if he does many such small jobs a day for nothing, will be loser. Again, we have the customer, who if charged for a small adjustment frowns and looks upon it as a "small" trick.

We believe it is largely a matter for the dealer himself to decide. He knows his customers and ought to be able to judge things.

The READERS' CLEARING HOUSE

Questions And
Answers



On Dealers
Problems

Shimmy Cuts Tire Life to Only 2500 Miles

Q.—I have a 1923 Durant coupe which has 31 by 5½ tires on it. The wheels were cut down before I bought the car. The front wheels shimmy so badly that tires will only give about 2500 miles service. I previously owned a Durant with 31 by 4 tires which gave 16,000 miles service on tires. Have put new bushings in steering assembly and have used thin tapered wedge under spring and tilted top of spindle back. I notice that with too much air or not enough air the wheels shimmy worse than with the right pressure. V. M. Friday, 6319 Limekiln Pike, Philadelphia, Pa.

In using balloon tires it is desirable to have the wheels balanced. With the front wheels jacked up there should be no tendency for the wheels to settle in any particular position. If the wheel is heavy on one side it should be balanced by using a weight of some sort on the other side. When wire wheels are used it is customary to take wire solder and twist around the spokes until the wheel is balanced. With other wheels a piece of metal would be bolted or riveted on.

On this car it is necessary to tilt the king pin so that the top end is back as compared with the lower end. The best amount of tilt is obtained by using a wedge between the spring and the axle. This wedge should be about 6 in. long and should be ¾ in. thick at one end and 3/32 in. thick at the other. With balloon tires it is often found that practically no toe-in is desirable. That is, in pushing the wheels outward so as to take up all of the slack in the steering connection, the wheels will be parallel. If any toe-in is used, it should be slight, that is about 1/8 in. rather than 3/8 in. Another possibility is that considerable wear has taken place in the worm and wheel at the base of the steering column. If there is looseness at this point it can be corrected by turning the wheel around so that other teeth are in action.

LETTERS FROM TWO READERS

This letter was written by one MOTOR AGE reader to another after reading one of the Clearing House articles.

"The MOTOR AGE of March 25, has just arrived and we notice therein your inquiry about a knock in an Overland motor. We do not approve of the answer given, and want to give you our suggestion. Put on two cylinder head gaskets instead of one, and we think the trouble will be cured. The Overland four motors are made with higher compression than formerly, and sometimes the coating of carbon on the inside of the head reduces the compression space in the head so much that the knock results. Hoping

this suggestion will be of use to you, I am W. S. Withers."

After Mr. Lewis had received the above letter and read it he passed it along to MOTOR AGE with the following comments: "I am sending you one of the letters I received in answer to the inquiry published in the MOTOR AGE of last week. I think you are partly right in your answer, as I have stopped the same knock in Fords by opening the carburetor a little, I used to use two gaskets quite often on the old type Fords before they changed the type of the cylinder head.—J. C. Lewis."

SUGGESTION: Read the question and answer in the right hand column of page 25 of the March 25, 1926, issue and see what you think about it.

HARDNESS TEST MARK

Q.—I have removed the ring gear pinion and drive shafts lately and notice that there is a blunt punch mark on the axle shaft, drive shaft and also ring gear and pinion. Have been unable to find out what these marks signify.—George A. Tolbot, Jr., 4629 Roosevelt Rd., Cicero, Ill.

These marks indicate where the scleroscopic hardness test was made.

Should Go 15 M. P. H. Faster Than It Does

Q.—We have a 1923 model R Hupmobile which seems to be in perfect mechanical condition and yet will only do 40 miles an hour. Do you think the valve timing may be wrong?—Limpert Brothers Garage, E. High St., Hicksville, Ohio.

This is a possibility and you might check the valve timing. The exhaust valve should close 8 deg. past top dead center. This will be at a time when the piston has come up to its top position and then has gone down a very slight amount, possibly 1/64 in.

We think it more likely that the spark is not sufficiently advanced. With the engine idling try retarding and advancing the spark. See if you can advance the spark enough so that the engine first runs smoothly and then with more advance the engine buckles and runs poorly. Also try accelerating quickly with the spark advanced to see if you can make the engine knock. If you cannot make the engine knock it is an indication that you do not have enough spark advance. Possibly there is looseness or slippage in the spark advance rod.

READERS' CLEARING HOUSE

LEGAL QUESTIONS ANSWERED

By Wellington Gustin

MEASURE OF DAMAGES

Q.—A night watchman in my public garage took out an automobile belonging to one of my customers without the customer's permission, and damaged the car to the amount of \$50. Can the owner claim a full paint job on the car and can he claim damage for a paint job and repair work which has not been done at all, and of which I have proof?—Stamford Station Garage, Stamford, Conn.

The customer can recover the actual damages according to the facts. The damages are measured by the cost to put the car in the same condition as before the injury. If this should necessitate a full paint job, then that would measure his claim.

If the car was damaged other than as to paint, this damage may be recovered regardless of whether customer has had the repairs actually done. The difficulty in either case of paint or repairs where they have not been done is proof of actual amount of damages. But if a court can be satisfied that estimates of cost of repairs and painting are correct and reasonable, then it will award damages on estimates alone. The best proof, however, is the actual amount paid for

repairs. But the careful one will watch that repairs made do not include repairs not caused by the injury.

DEPENDS ON MORTGAGE

Q.—We have been wondering if it is necessary to have a sheriff recover automobiles which we hold a chattel mortgage on when the owner fails to make payments according to agreement or could we go and take them ourselves?—Scanlan & Gilmore, Potsdam, N. Y.

Your question depends upon the provisions of the chattel mortgage. Most mortgages provide that the holder may take possession of the mortgaged property without process of law from a court, upon failure of payment, etc., according to the agreement. Under such mortgages the mortgagor may refuse to deliver possession and thus force the holder to go to court to recover in spite of the agreement to deliver peacefully. But where the mortgage is silent as to recovery of possession by the mortgagee upon failure of mortgagor to carry out his agreement, then it is necessary for the mortgagee to foreclose the mortgage to recover possession legally.

Planning Your New Building

Sales on One Street and Service on the Other

Q.—I am enclosing a rough sketch of a piece of real estate we recently purchased on which we intend building a new sales and service garage. On the sketch I have given a general idea of what we will require in regard to size of sales room, office, etc. The rest I leave entirely to your judgment as I have viewed with interest and approval a number of your plans in recent issue of Motor Age.

We are planning on a one story building of brick and tile. There is a possibility of getting considerable storage in the neighborhood. Would you suggest a basement for this purpose or a second story?—McFadden Motor Co., 684 Seventy-third Ave., West Allis, Wis.

We have made a plan for you including basement and you can judge for yourself whether you think the space can be utilized to make it worth while to go to the extra expense of building this floor. We would recommend the basement rather than a second floor unless you wish to move your stock and shop to the second floor and use the first floor for storage with the overflow on the second floor.

The arrangement we have made would work either way, but if you use the second floor for shop and storage we would use the wing over the showroom for shop purpose. It is rather hard to install a ramp in a building as small as this one, without using a large portion of your storage space and at the same time have a rather awkward ramp or both. By shifting the aisle space to one side in

By Tom Wilder

room below the balcony and the same above. Skylight will also be advisable here. The trusses in the storage garage and shop need not have more than twelve feet clearance.

We have reserved a small space under the showroom for the heating plant and here it would be well to extend the basement out under the sidewalk to take care of coal storage.

Shop Could Be Made Larger

The shop is not large but could be increased in size by using part of the space opposite the ramp entrance for repair purposes. If you do not like the balcony idea the stockroom space could be divided and part of this space used for office purposes. You could also reverse the position of the office and stockroom, by putting the stock on the balcony.

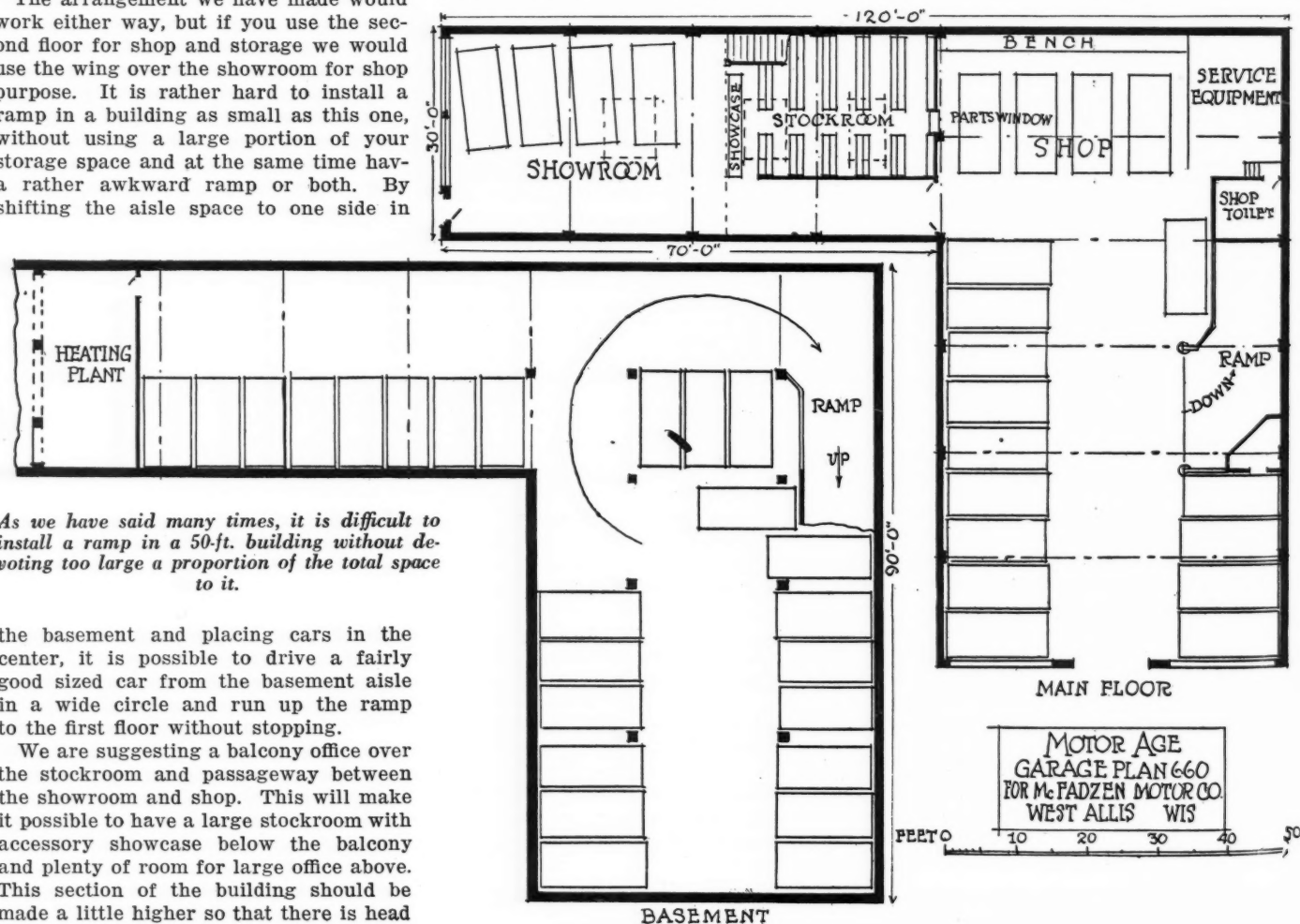
In order to save space we have located the shop toilet over the ramp where it will need to be elevated somewhat to give headroom on the ramp.

When Should a Ramp Be Used and Why?

The ramp finds its best field of usefulness in the large storage garage. Here the car owner pays the hoisting bills as he should and the dealer only has to provide the ramp. That is fine, and in the large garage it works out to perfection, but when the man with the small building tries to put it over he bumps into the fact that the ramp, with a few exceptions, kills storage space to the extent of about 16 cars or more, half on each floor. If his storage space would normally hold 50 cars this would be one third of his gross revenue or \$240 at a \$15 per month rental.

An elevator, if well placed, would take 4 car spaces or \$60 a month leaving \$180 for interests, operating expense and profit from the 16 spaces.

The answer is, build one story until you are big enough so that 16 cars will be a small portion of your total or until the operating expense of the elevator would be more than \$180.



As we have said many times, it is difficult to install a ramp in a 50-ft. building without devoting too large a proportion of the total space to it.

the basement and placing cars in the center, it is possible to drive a fairly good sized car from the basement aisle in a wide circle and run up the ramp to the first floor without stopping.

We are suggesting a balcony office over the stockroom and passageway between the showroom and shop. This will make it possible to have a large stockroom with accessory showcase below the balcony and plenty of room for large office above. This section of the building should be made a little higher so that there is head

Answers to Readers' Questions

Has Trouble with Knock in Front Axle

Q.—I have a model L.S.T. light six Columbia car that has a bad knock in the front axle or steering connections. I have rebushed both front springs and installed new shackles and pins. Also installed new king pins and bushings. Also new tie rod pins and bushings. Bearings in both front wheels are kept tight at all times. Steering connections are also tight and properly adjusted. The knocking noise is heard when the weather is wet and rainy, while in dry weather it is seldom heard. Front wheels have been checked for alignment several times. Could it be that the front springs are sagged?—Ludwig Stromer, 2613 S. 59 Ct., Cicero, Ill.

We wonder if you have checked up the springs in the drag link to see if one may be broken. This would give considerable back lash or looseness in the steering gear, however, which you would probably notice. It occurs to us that with all the work you have done the knock is somewhere else. Perhaps the engine is loose in the frame and the noise is only noticed when the car swerves suddenly to one side or the other as would be the case in striking an obstruction in the road. Another possibility is that the radiator is not properly installed and makes a pounding sound in the front of the car. MOTOR AGE readers may have some other suggestions to offer.

Q.—What is the best oil pressure to use on this 6Y Continental engine?

Where pressure lubrication is used to main and connecting rod bearings, a pressure of approximately $\frac{1}{2}$ lb per mile per hour is usually considered normal. This means that at comparatively high speed the pressure should come up to 30 or 40 lbs.

Solid Wrist Pins First Used

Q.—Why is it advisable to use solid wrist pins on this engine?

Solid wrist pins were used at first because of the fact that the pin is grooved on opposite sides which it was feared would weaken the pin. Subsequently it was found that a hollow pin could be used as it was strong enough in spite of these grooves.

Q.—Would light weight pistons be advantageous in this engine.

Yes. The lighter the piston the better it is for any engine assuming the piston has sufficient strength.

Q.—What causes valve tappets to twist while in action and make noise?

The twisting action does not cause the noise. This is due to looseness or to wear at the surface on which the cam bears. Noise may also be due to wear on the cam itself or to loose camshaft bearings. Taking a screwdriver and pressing sideways on the tappet will sometimes enable you to locate which

one is causing the noise and may enable you to run down the trouble.

Q.—What causes the engine to load up when accelerating?

This is usually due to insufficient heat. A hot spot manifold will often overcome a condition of this sort.

BUT IT MUST BE PUT BACK RIGHT

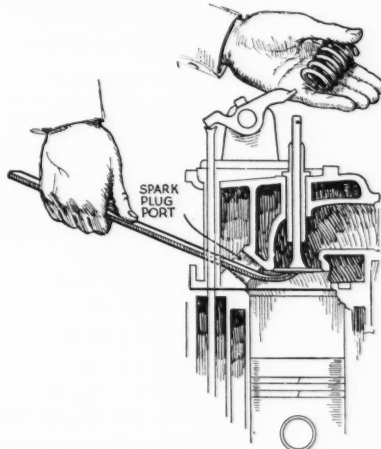
Referring to page 25 of the March 25th, 1926, issue of MOTOR AGE wish to advise the No. 3 piston on a Willys Knight may be removed from below if the Lanchester balancer is first removed.

Referring to No. 1 cylinder of the Ford pumping oil first, wish to say it is because this cylinder is damaged when the lubrication system fails. When flow of oil in tube stops on account of an obstruction or steep grade, it starves the No. 1 cylinder first. The resultant scoring of the piston and cylinder walls then causes oil pumping when oil flow starts again.—J. A. Wiltse, Gregory, S. D.

SHOP KINKS IDEAS That have been Found Useful

Replacing Spring in Overhead Valve

To replace overhead valve springs without removing cylinder head I take a bar that will go through the spark plug port. I then put a bend in the bar so that it will hold the valve up. A broken spring can then be removed and a new one installed without the necessity of taking the cylinder head off.—T. L. Williams, Montgomery Motor Co., Clarksville, Tenn.



Readers of MOTOR AGE are invited to submit ideas that they have found useful in doing some particular service job in the shop in a better or quicker way. For each one published \$2.00 will be paid. Whenever possible the idea should be accompanied by a sketch or diagram from which a drawing can be made.

Can Radiator Solution Make Valves Burn?

Q.—Advise what effect — radiator solution made by — would have on a motor car, if any? Would it have any tendency to burn the valves of the engine or what would be the cause of the valves burning, if not the solution? We have a customer with a Studebaker car who claims his valves burn due to the radiator solution which we placed in the car. —Phillips Electric & Battery Co., Rockford, Ill.

The solution you refer to is distilled glycerine diluted with about 40 per cent water and according to information we have available is good to 20 or 30 degrees below zero. As far as we can see it would have no effect whatever on the valves burning. Even if the solution did not circulate and caused the engine to get very hot it would not burn or injure the valves.

It might overheat the cylinder walls if it didn't circulate properly, but would do no damage to the valves. The burning of valves, however, is aggravated by too lean a mixture and if the carburetor setting was just about right for summer driving it may be that with winter operation the mixture is lean most of the time. A lean mixture burns with a hot flame which has an excess of oxygen and has a great tendency to burn valves and seats.

This is often experienced on aviation engines where if the engine does not heat up properly the valves will burn in a short time and put the engine out of business. Another cause for valve burning would be too close an adjustment of the tappets which would tend to make them hold open when the engine became heated. Aside from a lean mixture and improper adjustment we know of no other cause for valves burning except poor material and natural tendency which is found in all engines. We are inclined to believe that the results experienced by your customer are due to natural reasons more or less, combined with failure to readjust the carburetor.

ENGINES WITH UNUSUAL VALVE ARRANGEMENT

Q.—Inform me by letter what the valve arrangement is on the Essex four of 1919 to 1923. Is it called an F head engine? Has there ever been a motor built called an F head?—A. F. Damm, Liberty Garage, Elk Creek, Nebr.

We do not know of any special designation for the valve arrangement used in the Essex four. One valve is overhead and the other valve is in the position used in L head engines. The F head engine which was used in one or two cases some years ago has one valve overhead and the other coming in at the side.

Clearing Up Electrical Troubles

Stop Light Current Should Go Through Ammeter

Q.—On what terminals should I connect a stop light wire on a Ford car? This stop light operates when the brake pedal is used.—Sherman H. Purnell, R. R. 2, Blandinsville, Ill.

If you want current taken by the stop light to show up on the ammeter, so that you can check the operation of the stop light when you are in the driver's seat, you should connect to the right hand terminal of the ammeter. This wire will go to the stop light switch while from the other switch terminal a wire will go to the stop light. The stop light itself will be grounded, by being mounted on the fender. If you do not care for the ammeter indication then you can connect to the terminal of the starter switch which already has one small wire connected on it. This is the terminal that connects to the battery. You would then run your line to the stop light switch and then to the stop light.

EMERGENCY CHARGING—AN INEFFICIENT METHOD

Q.—As we do a great deal of battery work and also build our own batteries, we would be in a bad fix should our charger give trouble. We have a constant potential charger of well known make, also two vibrating chargers. Could you give us a wiring diagram showing how to use just a Tungar bulb for emergency use? Our current is 220 volts, 25 cycles, A.C.—Walter A. Claussen, Claussen Auto Repair, Ogden, Iowa.

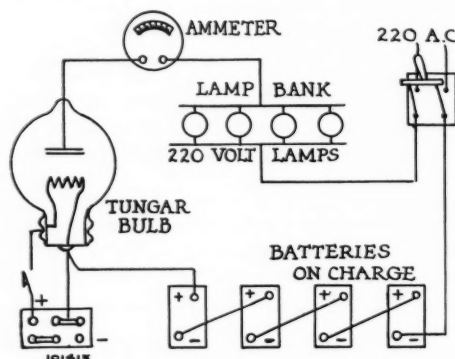
Charging with a bulb only would be very expensive unless you could charge about 30 six-volt batteries at the same time. Under these circumstances it would be necessary to have a low resistance rheostat to use in the circuit. We are showing a diagram however, which might be used in an emergency only, such as you mention. The Tungar bulb has the ability to carry current in one direction only, that is from the upper terminal and the plate connected to that terminal across the bulb to the filament. You would have to experiment somewhat with the filament current.

If you had too little filament current the bulb would not work very well and if you had too much filament current it might burn out. If you should try this scheme we would suggest leaving the filament battery at the left disconnected or the switch open until you have the other batteries connected up. If there are only two or three batteries on charge you will get about $\frac{1}{4}$ ampere for every 60 watt, 220 volt lamp used in the lamp bank. Assume you wanted 4 amperes for example, it would require about 16 lamps.

You would then close the 220 volt A.C. switch and at first would get no current until the filament battery is put in

Edited By A. H. Packer

service. You would then connect up one cell of the filament battery to the filament and close the switch. This might allow the alternating current to send some charging current through the lamp bank and through the battery. You could then experiment with the filament battery, possibly using a 6 ohm rheostat such as might be used on a radio set in



This charging circuit works but costs too much for current

order to cut down from four volts to three or from six volts to five. In a regular Tungar rectifier the filament current is supplied by a connection to a few turns of the transformer, but we have no information as to the exact voltage needed. In the circuit shown with four batteries on the line the efficiency would be in the neighborhood of 10 or 12 per cent.

Cheap Voltmeter Does Not Work on This Test

Q.—In your Feb. 25th, 1926, issue of MOTOR AGE on page 27, you describe a test for the secondary winding of a high tension ignition coil, using a voltmeter. I find that the winding is so fine and has so much resistance that an ordinary voltmeter does not show any reading when tested with a 6-volt battery. What kind of a voltmeter should be used?—Lead Mountain Garage, Clitherall, Minn.

A good voltmeter is one which has a fairly high resistance while cheap voltmeters have low resistance and take considerable current, consequently draw considerable energy from a small battery and are not so accurate. Perhaps your voltmeter is a cheap one designed for checking up on radio B batteries. If so this accounts for your trouble. A 15-volt meter should have a resistance of several thousand ohms, and as the secondary resistance will be from 2000 to 5,000 ohms, it should give you a reading of two or three volts.

Making a Small Charging Plant for Lighting

Q.—I intend to assemble a small lighting plant using an automobile battery, a generator and lamps. I find that two 6-volt-32-c.p. automobile bulbs throw enough light for two small rooms. I am experimenting with a Ford battery and get the above results. I have a motor generator from a Pullman car. It is a model A-25-6-12 volts made by Apple Electric Co., I intend to run it with a small gas engine. What horse power would it take to run it? What is the highest charging rate?

Would a 12-volt battery run two 6-volt, 32 c.p. lights? How long would I have to run the generator to charge the battery if the battery were fully discharged? Would the 12-volt battery throw more light than the 6-volt? Would this machine be better than using a Ford generator and would it heat up on a 12-volt battery? What kind of a cutout can I use for this work? Where can I get it?—Herschel W. Green, Castleford, Idaho.

The machine you have generates on 6 volts, although it uses 12 volts when operating as a starter. Accordingly for your purpose you can consider it as a straight 6-volt generator. For this reason a 6-volt cutout as used on a Ford car will be o. k. There would be an objection to using a 12-volt battery as the generator would not charge it without over heating. You would also get no more light for you would have to use 12-volt bulbs. If you use 6-volt bulbs on a 12-volt battery you would burn them out unless you put them in series and then it would be the same as using a 6-volt battery. A motor generator is not usually as efficient when generating as a machine designed for generating only.

Accordingly while we have no figures on the two machines we believe that it would take a little less power to drive the Ford generator. Of course, if you would have to buy a Ford generator and you already have the other machine it might be advisable to use it. You can charge at from 10 to 15 amperes depending on how hot the machine gets and the condition of the battery. Delivering 15 amperes at 8 volts is the equivalent of 120 watts and figuring an efficiency of 80 per cent it gives us 150 watts as the necessary output of the engine which is approximately .2 horse power. If the engine will develop one half horse power you are safe to use it, or even if it develops somewhat less. With battery discharged it would take anywhere from 10 to 20 hours at a 10 ampere hour rate to charge it depending on how long the battery had remained in a discharged condition. This is due to the fact that a battery sulphates rapidly when allowed to stand discharged. We see no reason why this method of lighting cannot be worked out satisfactorily.

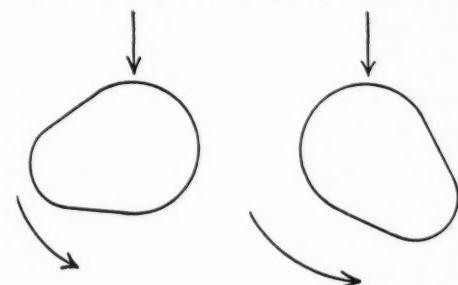
Answers to Readers' Questions

Wants Simple Explanation Of Cadillac Timing

Q.—In the April 30th, 1925, issue of *MOTOR AGE* you explained valve timing on model 61 Cadillac and you again referred to this in the January 28, 1926, issue. This is not clear to me. Could you explain it a little more in detail.—California Reader.

We are showing three illustrations which should make this clear. One is a detail drawing of the cam used on the type 61 Cadillac. This drawing shows that the heel of the cam is not a circle concentric with the rest of the cam. It shows, however, that certain portions of the cam at the right and left, as shown in this illustration, are concentric. One of these portions known as concentric surface B is used for timing and is obtained by setting the flywheel in accordance with the marks.

In order to get the idea, we will now refer to the second illustration which shows two cams, an inlet and an ex-



INLET EXHAUST
Positions of cams in cylinder which is about to fire

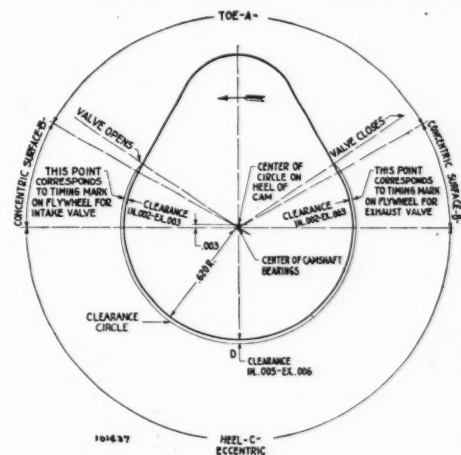
haust cam in the positions they would occupy when the cylinder is about to fire. If we remember what any one cylinder does when it fires we know that the piston has to go down about two thirds of its travel before the exhaust valve starts to open. This means that the crankshaft turns about 1/3 of a revolution and that the camshaft turns about 1/6 of a revolution before the exhaust valve starts to open. Looking again at the illustration which shows the two cams, we see that the one at the right represents the exhaust cam in the position it occupies when the cylinder fires. While the piston is moving down the exhaust cam will be rotating around to the left or counter-clockwise, and when the circular part of the cam has passed under the arrow the exhaust valve will start to open. In the Cadillac instructions it tells us to always start by setting the cylinder to be timed in the firing position and then turn a certain amount. This cam diagram will show why we have to turn about a third of a revolution in order to use the right

portion of the cam. When we come to the inlet valve we see that the more rotation is necessary and that the camshaft must turn about half a revolution. Another way to think of it is to figure on what happens in the cylinder after the engine fires and the piston goes down the piston must come up again in order to expel the old burnt gas before the inlet valve can open. This means about a revolution on the crankshaft or half a revolution on the camshaft. Before taking up the exact nature of the Cadillac instructions, it would now be well to consider the two firing orders used on the V-61 and the V-63, these being shown in another illustration. You will notice that the cylinders are numbered in the order in which they fire rather than taking an arbitrary cylinder numbering and then skipping around to the firing order.

Help on Setting Valve Tappet

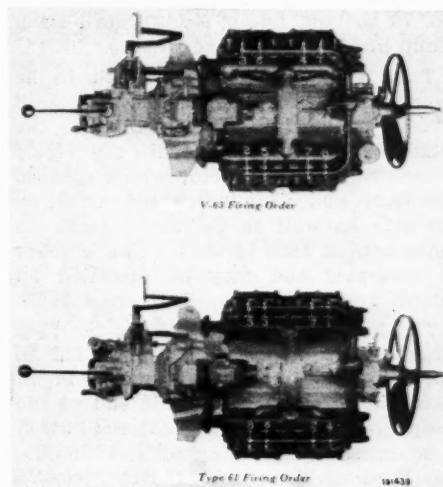
Accordingly when you time a Cadillac with one of these pictures in front of you you see clearly which cylinder fires next. One of these illustrations also helps out on setting the valve tappets for after you have obtained the position for the first cylinder, it is only necessary to turn the crank one quarter turn and check with the mark on the fly wheel in order to have the right position for the second cylinder that fires. For example, if you time the inlet valve of the No. 1 cylinder which is the front one on the left side in either engine, then on the V-63 you would time the inlet valve of the right rear cylinder next, while on the V-61 you would time the second one from the front on the right side as the second cylinder to be timed.

On Cadillac flywheels a mark IN-S,



Detail drawing of cam which is used on type 61 Cadillac

means inlet valve setting, a mark Ex-S means exhaust valve setting, a mark Ig-A means ignition advance setting, while the letter C means dead center



Order in which cylinders fire on V-63 and type 61 Cadillac

position with piston at top or stroke. The letter C usually has figures at either side of it telling the cylinders referred to. The best method, however, is to check with the piston to time the dead center position in the first place. On some of the Cadillac flywheels the inlet and exhaust marks are accompanied by the cylinder numbers, while on others there are no numbers. In setting the inlet valve, for example, it is necessary to find the dead center position first. Then just to the left will be the inlet setting mark and where there are no numbers, it will be necessary to put a chalk mark on the flywheel and then crank the flywheel nearly one revolution until this inlet setting mark comes up to the indicator.

It is only necessary to find this position once for the inlet valve, for after doing the first cylinder you proceed to the next cylinder according to the firing order. Then for the exhaust valve you proceed the same way, finding the dead center position and then turning about 1/6 of a revolution until you get the exhaust valve setting mark under the indicator. While the exhaust setting or inlet setting mark may indicate two cylinders, it does not mean you can set two cylinders with the crank in the same position, but you must time one cylinder at a time and then turn a quarter of a revolution and time another one.

Timing the valves in accordance with factory procedure insures a better job, is more satisfying to the mechanic and gives results that satisfy the customer.

Timing the valves in accordance with factory instructions is the safest way. It is also more satisfactory to the mechanic when he understands something of the car's construction, and knows why a certain method has been recommended. It also insures satisfactory operation.

AN ARRAY OF NEW PRODUCTS

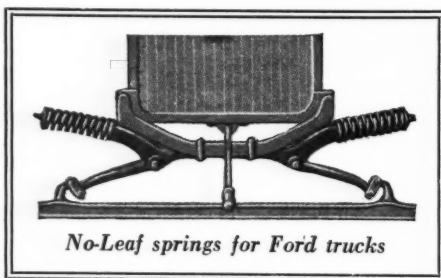
New Cincinnati Victor Lamps

THREE new offerings in the illuminative field are made by the Cincinnati Victor Company, 712-20 Reading Road, Cincinnati, Ohio. They are catalogued as No. 73 Driving Lamp, No. 21 Ford Dash Lamp and No. 46 Parking Lamp.

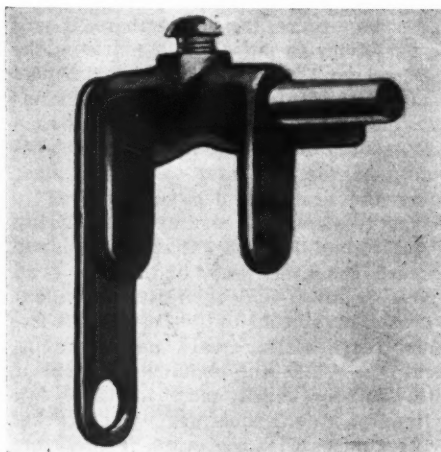
The driving lamp is designed to be mounted on a car below the headlamp and to be used in connection with the dimmers. It is supplied with the Victor Brown Universal reflector which spreads the light and illuminates the ditch on the side as well as the road, itself. A plain convex lens is used. The bracket is universal and may be installed on almost any type of car. List price, \$5.50.

The No. 21 Dash Lamp is for the 1926 model Ford. It can also be installed on any car with a metal dash or instrument board. A green jewel in the end of the lamp gives it a touch of color. Switch is operated by pressing in and turning the hood of the lamp. List price, 75 cents.

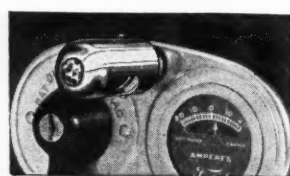
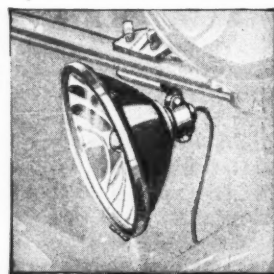
In the No. 46 Parking Lamp is a com-



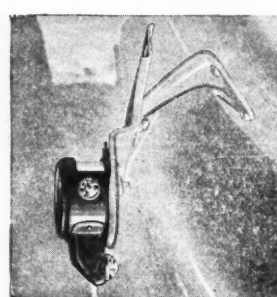
No-Leaf springs for Ford trucks



New type fan belt guide



Left—Cincinnati Victor driving lamp. Above—Cincinnati Victor dash lamp. Right—Cincinnati Victor parking lamp



bination tail and parking light for the 1923 Ford. It replaces the regular tail lamp shell, clamping on in the same manner and is held in place by the wire retaining ring. It cannot be used where the tail lamp is on the tire carrier. Supplied with a special dash switch that can be installed without drilling this device lists from \$1 to \$1.35.

No-Leaf Springs for Ford Trucks

HAYES Equipment Company, Michigan Boulevard at Ohio Street, Chicago, are manufacturers of the No-Leaf Springs for Ford trucks. As the name implies these are leafless springs, operating on the coil spring principle. The load is carried by two spiral springs, one for normal loads on ordinary roads—the other coming into action where the load is heavy or the road rough. The makers declare No-Leaf springs serve as springs, check, and shock absorber, delivering perfect spring action without friction and without the necessity of lubrication. These products carry the company's guarantee to outlast the life of the truck. Front spring installations for Ford trucks list at \$18.50.

Marketing New Glare Shield

THE L-W Shield Company, 46 Cornhill street, Boston, Mass., is marketing a new glare shield, the development of which was announced in the April 1 issue of MOTOR AGE. It is said that this shield will eliminate the blinding glare from approaching headlights during night driving. It is made of blue-green transparent pyralin sheeting, and fits any type of car. When properly adjusted glaring lights are diffused in the glare shield, giving the driver clear vision ahead, according to the claims of the makers.

Air-Friction Carburetor

THE New Air-Friction Co., Dayton, O., which recently purchased the Air-Friction carburetor, states that while it has not made any changes in the carburetor closer limits are being maintained in the machining operations. Wherever necessary all the carburetors manufactured by the former company are being fitted with more accurately machined parts without charge to the owner.

New Type Fan Belt Guide

DESIGNED for use on all Ford models the new type Fan Belt Guide, manufactured by Lawrence F. Kreger, 38 S. Dearborn St., Chicago, is made of a smooth iron casting adjustable on a steel arm. The guide is declared to afford positive protection against the fan belt slipping off the pulley, thus eliminating an overheated engine from that cause and increasing the life of the fan belt, itself. The retail price is 20 cents per guide.

Air-Tite Valve Cap

A VALVE cap which the manufacturers declare will prevent air leakage and give highly efficient service generally is being produced by the Direct Selling Syndicate, 619 St. Clair Street, Chicago, Ill. The device is marketed under the name of the "Air-Tite Valve Cap" and it is said to live up to its name, being rendered air tight by two principles in the cap—"ball-bearing" action and compression contact. The cap is made in three parts—an outer metal section, nickel plated; a special non-leaking packing disc; and a third or inner section which supports this disc allowing it to contract solidly with the valve stem. Held thus firmly the packing disc cannot turn when the cap is screwed on and the compression action positively seals the opening. The "ball-bearing" type of pressure is that by which the cap presses the inner section down on the packing disc. It is this operation which is said to insure a perfect register between the packing and the valve stem, producing an air-tight seal. Retail price is \$1.50 for a set of five caps.

Bosch Reproducer in Wicker

ANNOUNCEMENT has been made by the American Bosch Magneto Corporation, Springfield, Mass., that it is prepared to furnish its radio trade with the Bosch Ambotone Reproducer in a Wicker Model. The design of the wicker model has been so worked out that it will match harmoniously with wicker furniture sets now being sold. The makers believe that in this offering they have a product that should have a strong summer sales appeal. It comes on the market as a part of the company's all-year-round radio program.

Use "Da-Nite" Glass in Mirrors

ALL standard models of the Kokomo Mirror are now provided with "Da-Nite" glass which does not reflect glaring light, according to the manufacturers of these mirrors, the Kokomo Automotive Mfg. Co., Kokomo, Ind. "Da-Nite" glass is claimed to be particularly valuable for night driving. Kokomo mirrors come with "Da-Nite" glass at no extra cost. Sales of the mirrors are handled by the Fulton Co., Milwaukee, Wis.

WITH ABUNDANT SALES APPEAL

Sho-Lite

AN automobile driver can always tell by the "Sho-Lite" if his headlights are burning, according to the makers of this accessory product, the American Chain Co., Bridgeport, Conn. The Sho-Lite is a small column of glass mounted on a light steel bracket that may be attached to any automobile headlight. The glass column is curved to a point just above the lamp hood and catches the reflection of the burning headlight. "Safer night driving" is the big selling argument.

Allbestos Transmission Lining

TRANSMISSION lining for Ford cars as manufactured by the Allbestos Corp., Philadelphia, is known as Allbestos Ford Blue, a super-weave transmission lining. This, the manufacturers state, is made of asbestos and not cotton and is being sold in rolls and in cartons. The carton contains a set of 3 with the necessary rivets for attaching and each piece is cut to length and is 1½ in. wide and ¼ in. thick. List price per set \$2, over size \$2.25. Twelve of these cartons are placed in a counter display box. A roll contains 100 ft., list price 50 cents per ft. Window and counter displays, literature, follow-up letters and all forms of dealer helps are furnished by the manufacturer.

Perfection Gasoline Filter

IN the Perfection Gasoline Filter the filtering is attained by means of chamols and a wire screen. The wire screen prevents any water from reaching the chamols and rotting it and also filters out the larger particles of foreign matter. The device is self-cleaning through the natural syphonic action that exists between the vacuum tank and gas tank. It is attached directly to the top of the vacuum tank, the gasoline entering at the top of the filter and passing through the filter and into the vacuum tank through the arm which holds it in position. Made by the W. T. Munro Mfg. Corp., 11 South Fourth St., Mount Vernon, N. Y. Designed in 3 models, list price the same on each, \$3.75.

"Vesta-Vaco" Batteries Now

ANNOUNCEMENT has been made by the Vesta Battery Corporation, 2100 Indiana Avenue, Chicago, that its line of automobile and radio batteries hitherto bearing the trade name of "Vaco" will, in the future, be known as "Vesta-Vaco" batteries. There also is the Vesta Isolator line and Vesta Standard batteries, giving the Vesta dealer three complete lines. Full details regarding the Vesta-Vaco products as well as other Vesta lines will be found in the company's March-April "Twelve Eighty," a publication for dealers, copies of which the corporation will furnish on request.

Pollak Universal Clamp-on Switch

AMONG advantages claimed for the Pollak Universal Clamp-On Switch made by the Joseph Pollak Tool & Stamping Co., 81 Freeport St., Boston, Mass., are elimination of drilling holes, marred dash board, difficult assembly and the elimination of installation charges. This device is quickly attached to the dash board, steering wheel spider, steering post or any other suitable position. One of the selling points is that it can be used when the switch is desired in some concealed location in order to prevent tampering by others. It is made of brass shell, and finished in nickel or black enamel.

Twin-High Transmission for Fords

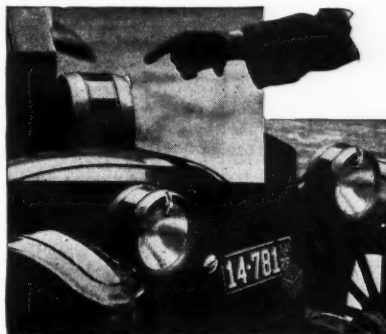
FOUR speeds forward and two reverse are provided in the transmission made by the National Twin-High Sales Corp., 403 Denison Bldg., Syracuse, N. Y., for Ford cars and trucks. It is used in conjunction with the regular Ford transmission and is bolted to the rear of the Ford transmission case. Internal gears and full ball and roller bearings are used. Price for passenger cars \$67.50, trucks \$84.50.

Queen Quality Luggage

THE Weisman Luggage Mfg. Corp., 325 W. Fayette St., Syracuse, N. Y., is making a line of automobile luggage and trunk racks. The trunks are constructed of 3 ply ¾ in. basswood veneer, covered with DuPont Fabricoid and the joints are claimed to be water and dust proof. Suitcases and hat boxes are made to fit the trunk. The manufacturer states that only one wrench is needed to install the trunk rack.

Diamond Safety Grip Chains

ALL side skid is said to be eliminated by the use of Diamond Safety Grip Chains manufactured by the Automobile Diamond Chain Co., Manchester, N. H. The chains criss-cross over the tire tread, being connected at the crossing point and are fully Parkerized to prevent rust.



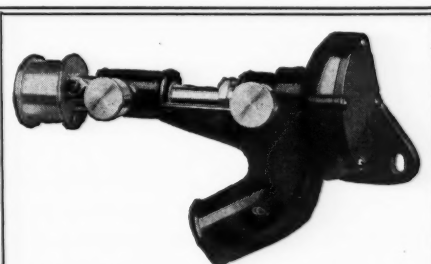
Sho-Lite

Dayton Discwood Wheel

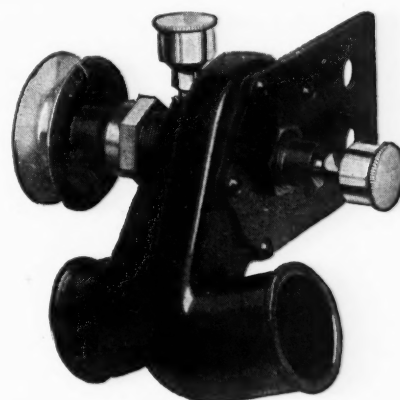
DISCWOOD wheels built by the Dayton Automotive Wheel Co., Dayton, O., are built up of hard wood sections, tongued and grooved together and are said to possess all the advantages of the wood spoke wheel plus the advantages of the disk wheel. The manufacturer states that road shocks follow the grain in the wood and disseminate through the whole wheel. Price per set of four wheels and five rims, bored to fit hubs varies from \$50 for the Ford, Chevrolet and Gray models to \$70 for the larger cars.

Blackhawk Water Pumps

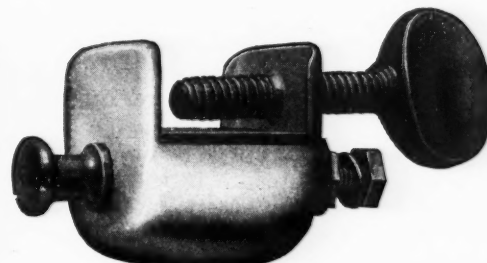
WATER pumps are now being made by the Blackhawk Mfg. Co., Milwaukee, Wis., for use on Overland 4, Chrysler 4 and Fordson Tractor. These pumps are of turbine-type design with bronze bearings and are driven by the fan belt. Prices, Overland and Chrysler models, \$7.50. Fordson model, \$15.



Blackhawk water pump for Overland



Blackhawk water pump for Chrysler



Pollak Clamp-On switch

Has 500 Steady Tire Customers

(Continued from page 11)

ment, although there is only one drain opening. The water and distillate first runs into the barrel under the open grating. As distillate comes to the top of the water, it runs off through a pipe into the adjoining barrel. When a sufficient amount of distillate has been recovered in this second barrel it is taken out and used over again. In the course of a month the amount of distillate recovered represents quite a saving.

The battery shop of Knapp & Abbott, which is in charge of George Ryskamp, is a model of cleanliness and efficiency.

"See that broom over there," said Mr. Ryskamp, pointing to a position on the wall. "That is a mighty important piece of equipment in this department and it is given a lot of use. We are cranks on cleanliness around here and we find it good business to be. In the first place, customers do not like to step into a dirty place and in the second place, no man can do his best work where everything is unkempt and uninviting. A clean place to come to, honest advice, good workmanship and fair prices, sums up our battery policy."

Just to take a casual look at the Knapp & Abbott Service Station as you drive along is to impress you that here is an establishment that will justify your patronage. And then when you drive in and get a first-hand whiff of the Knapp & Abbott brand of service and salesmanship you quickly learn why success followed failure in this location.

It's the old, old story of "Man and His Methods."

Getting More for Used Cars

(Continued from page 15)

mum cost and, in addition, the personal interest of the Chevrolet dealer who is doing the reconditioning in every used Chevrolet sold through the Exchange. While ordinarily the individual dealer did sell used cars of his own make on a reasonably conscientious basis, dealers of other makes of cars took no particular interest in the condition of used cars that they sold of a make other than their own.

"While I, as manager, do not set myself up as an infallible judge of used cars and their condition, in view of the fact that my entire organization specializes in used cars, and after a reasonable lapse of time, we would have to be absolutely dumb if we were not more proficient relative to used cars than the average individual dealer whose prime business is that of new cars, and who regards the used car as a burden and an enemy to him. Even in our small Exchange, we have road-tested and checked approximately 1200 automobiles in one year, with the result that, especially as pertains to the popular makes of cars, we know where to look for the likely trouble."

Cars Are Far from Finality

The automotive industry is nowhere near finality in the design, type or price of motor cars, asserted C. H. Warrington at a recent meeting of the Washington section of the Society of Automotive Engineers. Obvious tendencies with regard to the engine are toward the use of a supercharger that will be accepted by the public when it is fully understood. It will permit the production of smaller and lighter cars for city use that will have suitable power for driving in congested traffic and added speed and comfort on the country highways, he said.

Oil filters will be standardized to a greater degree and

the oil in the crankcase will be heated. Air cleaners are desired by the public and will be developed further. An engine that is practically free from vibration is needed and wanted, and there is increasing demand that parts and units be made more accessible.

The ideal fuel feed will be attained, in the speaker's opinion, when the engine is supplied with definitely regulated quantities of fuel and air by force injection so that the mixture ratio will remain constant regardless of piston speed. Gear changing will become as obsolete as oil lamps, he thought, and an infinitely variable automatic gear mechanism will become standard design. Four-wheel brakes and bumpers will be made compulsory.

Other developments in line with present tendencies are steam cooling, better visibility by the driver, unsplinterable glass, flexible bodies, complete lubrication of the chassis from central reservoir with a single grade of oil, and non-glaring headlights.

Engine Starting Troubles and Remedies

Some common causes of engine starting trouble are too wide spark gaps, weak battery, and improper use of the throttle and choke, said J. W. Lord, general service manager of the Harrolds Motor Car Co., at a meeting of the Metropolitan section of the Society of Automotive Engineers, held recently in New York City.

The engine will start much quicker in cold weather, he said, if the throttle is nearly closed. Too long use of the choke results in flooding the cylinders with gasoline and thus prevents starting. If the battery is low so that it does not turn the engine over fast enough, the clutch should be withdrawn to relieve the starter of this additional load.

Rusting inside of the engine has been a big trouble maker in winter service of late years and adds to the difficulty of starting. It can be prevented, said Mr. Lord, by keeping the engine temperature high, as by using an automatic radiator shutter, and by ventilating the crankcase by a forced draft, as by connecting the crankcase with the carburetor intake by a small pipe. This removes the water vapors of combustion before they condense. The use of glycerin anti-freeze solutions instead of alcohol is desirable because it causes the engine to operate at a higher temperature and prevents condensation of water in the engine and also helps to keep the lubricating oil thin. When the oil is cold and stiff, it is difficult to get it to the pistons and bearings at once when starting.

Excessive oil consumption and smoking are often caused by the user putting too much oil in the crankcase. Other causes are worn bearings, burned valves, and oil dilution. Burned out bearings sometimes result from one worn cylinder or badly fitted bearing taking all of the oil from a pressure system and starving the other cylinders and bearings. Rapid accumulation of carbon in the cylinders is closely tied up with excessive oil consumption.

In Next Week's Issue

In the *Sales and Service Reference Number of MOTOR AGE*, to be dated May 6th, will appear a Revised Flat Rate Manual listing approximately 10,000 operations.

EDITORIAL

Tell 'Em and Sell 'Em

NOW and then as you ride over the country's popular highways you observe a sign on the front of a filling station or some other roadside establishment which reads "Information." It is an invitation to the motorist to get out and ask questions. Primarily it is a device which is intended to develop business. And no doubt it does. This is a sign which should be seen much more often on the fronts of automotive establishments. We believe many members of the trade, especially those located on more-traveled highways are overlooking a good bet. The way to make people buy is first to bring them into your place of business. The "Information" sign and preparedness to furnish a variety of information about roads, etc., is one means to that end.

The dealer will progress by improving his own merchandising methods, not by complaining against the whole world.

Equipping the Shop

WE all know that the "well equipped shop gets the business," but the equipping of an automotive service shop is a matter that should command the proprietor's most intelligent thought. We have seen too many shops filled with expensive equipment that is rarely used, and likewise we have seen many shops trying to get along without tools and machines that might have saved them money and enabled them to turn out better and faster work.

The proprietor of a service shop should buy his equipment intelligently. He should never buy any expensive machine until he knows exactly what it is intended to do and how it is operated. And then he should make sure that he has in his shop, or can get, an employee capable of operating it properly.

But it is not enough to know what the machine will do and how it is operated. The proprietor should know just exactly what opportunity for profit this machine offers him and he should know how he is going to get the profit that the machine offers.

For instance, suppose that you have been grinding valves by hand and charging customers by the hour for the mechanic's time. You install power equipment that reduces the time required for this job one-half or more. Do you suppose that you can continue to charge for this job by the hour for the mechanic's time and make the profit that you should make? You cannot. You have brought in another factor that must be paid for its time, and that is the power equipment. You have an overhead charge, such as interest on investment, depreciation and upkeep, on this equipment that goes on constantly.

In farming communities where labor is hired by the day a man without a team gets one rate and a man with a team gets a much higher rate. Compensation is based on what can be accomplished in a given time. A mechanic in the shop working without power equipment is worth one price per hour to the customer and

working with power equipment he is worth a higher price.

It is here that flat rate charges are of value to the shop. It is hard to get the higher rate per hour, but if a reasonable flat rate charge is established and the customer sold on it in advance there will be no argument and the shop will be properly compensated for its improved equipment.

Don't be a crab in your business dealings. A crab goes backwards.

Dealers as Directors

ANOTHER car manufacturer has added a dealer to its board of directors. The Peerless company announces the appointment of C. H. Larson, head of the Peerless distributing organization in New York City, as a member of its board.

A short time ago the Dodge Brothers company was strengthened by the addition of two dealers to its board, and only a few months ago the Marmon company created an advisory committee of dealers to help formulate factory merchandising plans.

These are indications of the broad view manufacturers are taking of their retail distribution problems. Not very many manufacturers today consider that their job is done when they have succeeded in selling their product to wholesalers and retailers. They know that eventually they will suffer unless they help to create conditions that will enable the distributors and dealers to move the product on to the ultimate consumer at a profit.

"The used car well bought is half sold." Paste that in your hat.

Coupes and Roadster

LAST fall when MOTOR AGE published illustrations and a description of a coupe made in England having a top that could be easily raised or lowered and plate glass windows that fitted into the door panels when the top was down, there was not any car manufactured in the United States with similar features. Today several manufacturers are making these convertible coupe-roadsters.

This is a type of car that should be easily merchandised. Both coupes and roadsters have been very popular within the last few years, but both have had their objectionable features. The roadster has been highly prized as an open air vehicle, but it could not be made much more comfortable in cold weather than the ordinary touring car. The coupe was an ideal car for inclement weather, but too much like a cage for those who love the rush of spring time's balmy air.

The car that can be used as a snug coupe or sporty roadster at will is a real contribution to automotive progress. It immediately knocks down a lot of sales resistance and gives the dealer something to sell that a great many persons want.

LITTLE PLANT CURTAILMENT NOTED

General Motors Earnings Set First Quarter Mark

Net for Period Is \$40,644,576
Compared with \$18,903,-
489 Last Year

NEW YORK, April 26.—In the first quarter this year, General Motors Corp. attained its highest record of quarterly earnings. Net earnings for that period were \$40,644,576 compared with \$18,903,489 for the first quarter last year, an increase of \$21,741,087 or 115 per cent.

In the 1926 quarter earnings is included \$5,789,760 as representing the undivided profits of subsidiary operations in excess of dividends received.

After deducting dividends on the preferred stock, amounting to \$1,910,634 there remains \$38,735,942, equivalent to \$7.50 per share on the common and comparing with \$16,993,129 or \$3.29 per share for the 1924 quarter.

The fact that the \$7.50 per common share earnings in the first quarter alone this year exceeds the \$7 which is the regular annual rate of common dividend gives rise to the report that an extra dividend of \$2, and possibly \$3, may be declared when the directors meet in the middle of May.

With first quarter earnings last year 115 per cent less than first quarter earnings this year, the regular annual dividend of \$6 and extras of \$6 were declared in 1925. To equal last year's \$12 dividend distribution this year it would be necessary, in view of the fact that \$7.50 per share was earned in the first quarter to pay \$5.50 in extras.

Retail deliveries to consumers by General Motors divisions in the first quarter amounted to \$224,720 cars, an increase of 65.5 per cent over the corresponding period last year. This constitutes a new record of retail deliveries for the first quarter.

Moskovics in Chicago

CHICAGO, April 26.—Fredrick E. Moskovics, president of the Stutz Motor Car Co. of America, Inc., was the principal speaker at a luncheon meeting last week of the Chicago Association of Commerce. His subject was "What the Motor Car Has Done for—and to—America." He traced the course of civilization throughout the ages, declaring that every step forward was a victory for transportation, from the time of the conquests of Alexander the Great. He declared that the economic and sociological independence of America is due to the removal of class lines by the automobile. He said the automobile had erased the Mason and Dixon line more effectively than any other medium since the Civil War.

Biflex Little Damaged

WAUKEGAN, Ill., April 26.—Fire which destroyed the offices and part of the Biflex manufacturing plant at Waukegan will not interrupt production, according to the following statement given out by the Biflex Corporation: "We desire to assure distributors and dealers that the fire in our Waukegan plant on April 20, while causing considerable inconvenience, will not seriously interfere with our manufacture and shipment of bumpers. Fortunately the only part of the factory having to do with production which was damaged was the enameling and plating department. The remainder of the plant was untouched and as we are able to handle the finishing work in our Decatur plant our production is going right ahead."

Chandler Adds Berline

CLEVELAND, April 26.—Announcement of the addition of a Berline 7-Passenger Sedan listing at \$2095 to its present line has been made by the Chandler Motor Car Company. This model is similar to the 7-passenger sedan listing at \$1995 except that the front seats are in a separate compartment. Two color options are offered on the Berline Sedan as it is finished in either two-tone tan or blue. The upholstery is mohair and equipment furnished with this model at list price includes front bumper, automatic windshield wiper, trunk rack, sun visor, cowl ventilator, rear view mirror, engine heat indicator, dash gasoline gage, cowl lights, smoking set and door and gearset locks.

Peugeot to Build in U. S.

DETROIT, April 26.—According to M. Levaupin, official spokesman of the Peugeot mission, the Peugeot Automobile Co. will locate a plant in the United States for the manufacture of the small Peugeot sedan, the financing to be by American capital. The party has left Detroit for New York where it will remain throughout April. Announcement of the complete plan for manufacturing, according to M. Lebaupin, will be made before the party sails at the end of the month. He said the original plan of the mission to seek an arrangement whereby some American manufacturer would build the light car under Peugeot license, has been abandoned. Details of the new plan will be announced following meetings in New York with representatives of American interests.

LaFrance Building Trucks

ELMIRA, N. Y., April 26.—The American LaFrance Fire Engine Company is now manufacturing commercial trucks on an established quantity basis and is devoting a considerable portion of the Elmira plant to the production of motor trucks of this description.

Output Is Maintained at Rapid Pace by Majority

Sales Better Than Last Year
and Good Weather Will
Bring Record Volume

NEW YORK, April 27.—Although there is a feeling of insecurity as to the continuance of present heavy operations in many of the automobile factories, there are only scattering instances as yet of actual curtailment. Only two of the large producers are turning out cars at materially lower rates than were anticipated for the season. Others seem to be maintaining output at an unusually rapid pace though it is doubtful whether retail demand in all cases quite justifies the heavy production and insures its continuance.

The probabilities are that if many of the larger companies had not been so well fixed financially during the present year, manufacturing operations and the piling up of completely manufactured stocks would have been curtailed earlier.

The thought is entertained that despite unfavorable early spring weather, sales have been better than last year at this time, and that 10 days or two weeks of fine weather would create a demand for new cars of record proportions. With good weather the true situation with regard to the immediate future of the industry will be outlined clearly. If buying develops in satisfactory volume it is likely that operations will be continued on much the present basis for the remaining months of the second quarter. With the new models of the later year, business in that period may be expected to attain a volume in keeping with normal enthusiasm arising from new presentations.

Dealer stocks—all new cars outside the factories—are reported only normal, and so far from being excessive that factories feel entirely justified in keeping up output in large measure as protection against their dealers losing business through inability to make deliveries.

First quarter truck and bus production hit a new high with 125,088 vehicles manufactured in the United States and Canada. This compares with 107,445 in the corresponding period a year ago. Truck and bus sales are eminently satisfying, and about 20 per cent of the output is now exported, a higher proportion than for the automobile end of the business.

Takes Stutz Distribution

CHARLOTTE, N. C., April 26.—The Stutz Safety Motor Company, a newly organized concern, has opened for business here as distributor of the Stutz line of motor cars. J. L. Hamilton is the head of this company.

TARIFF ROCKS CANADIAN INDUSTRY

Several Plants Close As Reduction in Levy Looms

New Budget Would Make Imported Cars Cheaper Than Assembled Jobs

OTTAWA, Ont., April 26.—Six special trains carrying a deputation of more than 3,000 workers from Ontario manufacturing towns, waited upon Premier McKenzie King here. Mr. King declared that the government has no desire to injure any industry, individual or section. The hon. J. D. Robb, minister of finance, says the automobile tariff cut stands. A deputation of automobile manufacturers will meet the premier next Friday.

NEW YORK, April 26.—Closing of several American automobile plants in Canada almost immediately after announcement of the proposal to reduce the Canadian import tariff on American cars from 35 to 20 per cent on cars whose retail value does not exceed \$1,200 and to 27½ per cent on higher priced models is regarded here as a move designed to impress Canadian officials with the consequences which might follow final adoption of the proposal.

The General Motors plant at Oshawa, Canada, closed but was to resume operations after price adjustments. Suspension of operations by the Dodge Brothers Motor Car Co. of Canada and the Durant Motor Co. of Canada was also announced as temporary and designed to give these concerns an opportunity to decide on future operations if the decreased import tariffs are adopted.

Leaders in the industry here emphasize the fact that there is nothing to show that the proposal to reduce the import duty is anything more than a proposal at this time. They point out that, introduced as part of the budget, the proposal cannot become effective until passed by the House of Parliament. They are inclined to believe that when the budget is finally passed it will not include the proposal, because they believe the Canadian politicians backing the proposal do not actually wish to lower the import tariff bar to such an extent that Canadian car manufacturers, unable to compete with mass production by plants in the United States, will be practically driven out of business.

If the proposal stands, what American car makers with Canadian plants may lose by closing these plants, or by restricting their operation, will be more than balanced, it is believed, by increasing imports under the lower duties of cars built in American plants.

A. P. Sloan, Jr., president of General Motors Corp., makes this point clear in saying that the proposal means "the transfer of production from Canadian factories to American factories, or the employment of a further amount of American labor and the elimination of a corresponding amount of Canadian labor."

Mr. Sloan adds that due to the fact that prices in Canada will be reduced, "it is fair to assume that consumption will be increased with corresponding increased profits to American manufacturers. So far as General Motors is concerned, its operations in Canada have been of an assembling character and it is well equipped to operate on either side of the line to any degree that the econo-

Summary of Canadian Affairs at Present

Minister of Finance Robb has presented a budget for passage by Parliament which will, if approved, materially cut the tariff on completed automobiles and make it cheaper for American manufacturers to build their cars in the United States than to ship the parts for assembly in Canada.

Canadian factories produced 11,252 cars and 2,978 trucks in January this year; 15,895 cars and 3,283 trucks in February and 18,272 cars and 3,487 trucks in March.

United States manufacturers who have subsidiary companies in Canada include Gray, Ford, Cadillac, Chevrolet, G. M. C. truck, Buick, Oakland, Oldsmobile, Willys-Overland, American-LaFrance, Dodge Brothers, Durant, Roamer, Gottfredsen, Studebaker, Hupp and Chrysler. Of these Ford, Willys, and Studebaker have indicated they will continue to operate their Canadian factories, and Chevrolet will operate until inventories are exhausted, when factories will close. Cadillac, Buick, Oakland, Oldsmobile and G. M. C. have closed or will close immediately. Dodge Brothers and Durant closed temporarily pending action on the budget.

mies of the situation require. So, from the standpoint of the corporation as a whole, we are not particularly affected one way or the other."

The General Motors plant at Oshawa is an assembling and finishing plant for the products of General Motors of Canada, Ltd., a subsidiary of General Motors Corp. Motors, axles and other heavy parts are manufactured in a plant at Walkerville, Ont., while bodies are made in the Fisher body plant in Canada. Cars assembled at Oshawa cover part of the overseas as well as the Canadian market, because General Motors as well as other American car makers gains the advantage of Canada's favorable trade relations with Great Britain and her colonies by assembling in Canada and exporting from there rather than from the United States to the overseas markets affected by these trade relations.

If the Canadian proposal stands it is assumed that the Oshawa plant would continue to assemble for such export although the Canadian market would be covered direct from the United States.

The lower import duties, though burdening the Canadian manufacturer with competition from mass production and lower costs in the United States, would make it possible for the Canadian consumer to buy his car at lower prices. He has been opposed all along to paying the higher prices, something like 50 per cent more than the American pays, which the present 35 per cent tariff has imposed upon him. In this consumer attitude, especially as expressed by the agricultural sections, is seen the chief impetus behind the proposal to lower the tariff. The changes in the tariff affect 600 firms and 22,000 employees engaged in the automobile industry in Canada.

Budget Called "Staggering"

MONTREAL, April 26.—Changes in the tariff schedule in the budget here are termed "staggering" and "stunning." Mr. Robb said:

"There is a pronounced sentiment throughout Canada that the automobile industry enjoys more protection than is needed to maintain it on a reasonably profitable basis, and in deference to that sentiment we propose a downward readjustment of automobile, motor truck and motor cycle duties."

It is proposed to reduce the duty on automobiles valued at retail at not more than \$1,200 and on motor trucks and motorcycles to 20 per cent under the general tariff, 17½ per cent under the intermediate tariff, and 12½ per cent under the British preferential tariff. On automobiles valued at more than \$1,200 each, the general tariff is reduced to 27½ per cent, the intermediate to 25 per cent and the British preferential to 15 per cent. To encourage Canadian industry a drawback of 25 per cent will be paid on materials used in the manufacture of the above-mentioned motor vehicles, provided that at least 50 per cent of the cost of the finished vehicle is produced in Canada. R. S. McLaughlin, president of the General Motors of Canada, Ltd., stated that his company was preparing to manufacture the Pontiac in July but has cancelled all arrangements to do so. Regarding the Chevrolet he said the company had been manufacturing over 200 a day, with the natural consequence that inventories are heavy and commitments, which have been made over a period of 90 days in advance are important. It is his intention to liquidate the inventory, clear up all obligations and commitments, and then import the cars completely finished from the United States.

The duty on the finished Chevrolet car is 20 per cent. The duty on any parts which the company has to import varies from 27½ to 35 per cent. "Regarding the McLaughlin car," he said, "it might be

possible to continue its manufacture on an exceedingly close margin of profit, but the plant is too large and there is too much money invested to carry on with a single line of car in which the volume is so comparatively small. I would repeat, if the tariff goes into effect the future of the industry in Canada is doomed as long as this tariff lasts.

"There is a clause in the new tariff of a drawback of 25 per cent on imported parts if 50 per cent of the cars were made in Canada. A close inspection makes us believe this is only a delusion, and is impractical, and amounts to practically nothing. If I am correctly informed no government has ever put manufacturers in such an impossible position where the duty on the finished product is lower than on the component parts. If and when the manufacture in volume of domestic Chevrolet cars ceases, our entire export business, which at the present time amounts to 45 per cent of our production, will entirely disappear."

Abandonment Is Seen

PHILADELPHIA, April 26.—The automobile industry is wrestling with probably the most acute emergency problem it ever faced, as a result of the introduction of a Canadian budget incorporating drastic reductions in import duties on cars and trucks. Prices have been reduced by some companies, and others are apparently still working on schedules, but back of the price situation is the more important prospect of an early abandonment of nearly all Canadian manufacture and assembly of American cars.

The situation is complicated by the fact that dealers are facing losses of millions of dollars on cars priced under the old tariff. Rebates to dealers covering losses on new car stocks are unlikely, with the exception of one or two companies that are committed in this respect. General Motors dealers are protected against price reductions under their contracts and of course will be rebated.

Rebates would mean the loss of profits from Canadian operations for the last year to 18 months, it is pointed out. There have been no reserves against such a contingency and the feeling among manufacturers is that the government should, in fairness, have provided some means of reimbursing dealers.

Largely because of unsettled conditions and the intricate application of revised tariff and tax provisions, new retail prices have been announced only for the Ford, Essex, Hudson, Overland and Willys Knight. Dealers handling other makes, were largely taking orders tentatively, quoting prices subject to change.

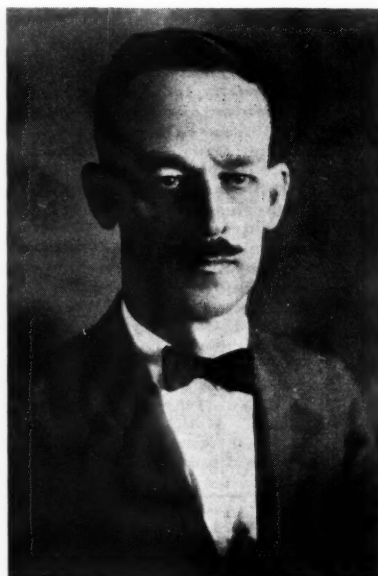
There is an evident tendency on the part of many in the Canadian industry to go slowly and await developments, particularly in view of the fact that two huge deputations, one from the automobile workers, merchants and civic officials of Oshawa, Toronto, Hamilton and

other cities, representing the manufacturers, and another of workers of the industry to the number of 2000 workers have been organized to wait upon the Cabinet.

While there is thus organized opposition, both by industry as well as in Parliament, little expectation of a change or modification is entertained. It is admitted that the reductions are very popular with the farmer element and the average person even in the industrial centers. The budget has never been voted down in the history of Canada, and though sometimes corrected in some details has never been changed in essentials.

A bulletin has just been issued, apparently through an error of the Customs Department at Ottawa, extending the reductions to unit parts, which was never contemplated in the original plan. The resulting confusion in Canadian ministerial circles equals the confusion in Canadian automotive circles generally. It is possible that the Government may work out a plan by which the bulletin may be recalled or the reductions otherwise cancelled.

Miller Heads Denver Branch of Oldsmobile



John H. Miller

DENVER, April 26.—The appointment of John H. Miller as manager of the Olds Motor Works, Denver branch, is announced by D. S. Eddins, general sales manager of Olds Motor Works. Mr. Miller has been engaged in the sale of automobiles for the last 10 years. He was born in Schofield, Utah, and his family later removed to Columbus, Ohio, where he received his schooling. In 1916 he was appointed factory representative at Kansas City for the Maxwell Motor company, and later transferred to Buffalo. He was with the Maxwell company three years.

Willys Plans \$2,000,000 Expansion at Elmira, N. Y.

Need of More Parts Than Can Be Supplied at Present Is Said to Be Reason

ELMIRA, N. Y., April 26.—John N. Willys, former resident of this city and president of the Willys-Overland Company, of which the Willys-Morrow Company of Elmira is a part, has completed a tour of inspection of his organization's local holdings. Mr. Willys announced that about \$2,000,000 will be expended for additional equipment and improvements at the Willys-Morrow factory. He also stated that at least 2,000 men would be employed regularly at the factory, sister-plant of the Willys-Overland Company's Toledo factory.

The head of the Willys-Overland Company declared it is of the utmost importance that the capacity and efficiency of the local factory be increased so as to make it possible to increase the output of Overlands and Willys-Knights. He stated that greater production was absolutely necessary and that this could only be done by increasing the number of parts being turned out locally.

President Willys stated that the present quarter will see a new production record of his company. He said that present production is even now greater than last year, and steadily increasing. It was his opinion that business conditions are very favorable for the automobile industry and that his company will have the best year in its history.

Mr. Willys was the guest at a dinner given in his honor by the Willys-Morrow Company, Southern Tier Motor Company and officials from other of the city's industries and business places. He complimented C. E. Killinger, head of the Willys-Morrow plant, and other local officials on the success of a system installed by Mr. Killinger. This system enables the foremen of the factory to form a board of control which works in conjunction with the management to eliminate waste and promote efficiency.

The Elmira factory is now turning out a million parts for Overland and Willys-Knight cars daily.

Plan Dirigible Service

NEW YORK, April 26.—Capt. Anton Heinen, under whose supervision the dirigible Shenandoah was built, announces that he and his associates are preparing to incorporate the Aero Corp. of America with \$2,500,000 capital to begin in the spring of 1927 an airship service between Atlantic City, New York and Philadelphia. The plan is for the service to start from Atlantic City in the morning, return there after landing on the Jersey side of the Hudson river opposite New York, and then make for Philadelphia, returning to Atlantic City before nightfall.

Maintenance Is Stressed In A.A.A. Code of Safety

Proper Upkeep Is One of Six Points of Good Driver, Jury Says

WASHINGTON, D. C., April 26.—In line with its policy of developing a code of motoring ethics to offset and replace the plethora of over-regulation, the American Automobile Association has announced today the verdict of a jury of nationally known traffic and safety experts on "What are the characteristics of a good and safe driver?"

An analysis of the opinions submitted on this vital problem disclosed that the seven men to whom this question was submitted by Thomas P. Henry, president of the A. A. A., are in accord on six major essentials, as far as good driving is concerned. These are:

1—The good driver has a high degree of self control at all times, this control manifesting itself in various ways.

2—The good driver always maintains his car in such shape that it responds easily and quickly, thus assuring control of the car as far as the purely mechanical equation is concerned.

3—The good driver regulates his speed in accord with the conditions of the road over which he is traveling, and never travels at such a rate that he cannot stop it within the "clear course" ahead.

4—The good driver invariably exercises due regard for the rights of others and always applies the simple axioms of courteous behavior.

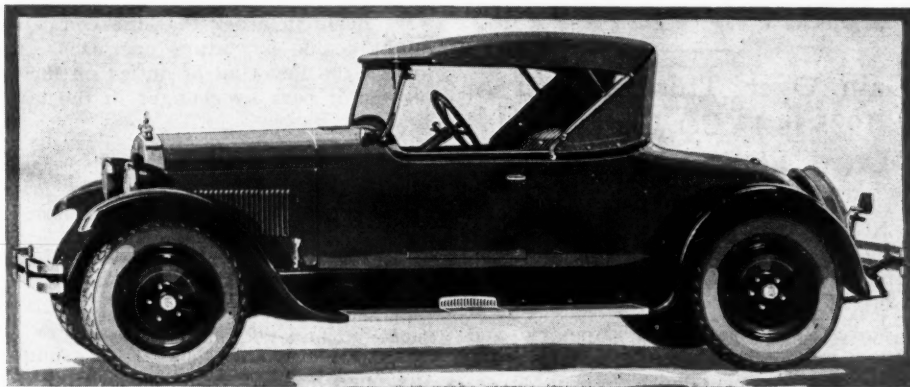
5—The good driver accepts the safety of the pedestrian as a primary consideration.

6—The good driver keeps his mind on the road ahead, as day-dreaming or chattering at the wheel causes many more accidents than are caused by bee stings.

In broadcasting the verdict, the A. A. A. also announced the names of the jury to which the matter was referred, as follows:

Ray McNamara, service engineer of the Chrysler Corporation, who has driven more than 1,000,000 miles without an arrest, without an accident and without an insurance claim of any kind; Bennett Hill, one of the greatest speedway drivers of the age; George M. Graham, chairman of the traffic and safety committee of the National Automobile Chamber of Commerce; Colonel A. B. Barber of the United States Chamber of Commerce, also director of the Hoover conference on street and highway safety; Dr. H. C. Dickinson of the heat and power division of the Bureau of Standards, who has made a special study of safe driving; Dr. F. A. Moss of George Washington University, a nationally known psychologist; Officer E. W. Smith, who for 10 years has regulated traffic at one of the most congested intersections of

NEW DODGE BROTHERS SPORT



The new Dodge Brothers roadster listing at \$880

Washington, and who is now on duty at the White House.

Biflex Unit Completed

WAUKEGAN, Ill., April 26.—The Biflex Products Company, maker of Biflex cushion bumpers, is now occupying the new addition to its plant. This new unit will greatly facilitate production and make possible an increased output on a rapid and efficient basis. The new building is of the most advanced type.

Expand Used Department

SEATTLE, Wash., April 26.—Expansion of the Nute Motor company used car department has been marked by the appointment of Dick Lockhart and Lew Harris as managers of this department of the concern. Unprecedented used car business has made it necessary to enlarge the floor space devoted to the sale of used cars. Mr. Harris for five years was manager of the Used Car Motor Mart of Detroit, which is said to be the largest used car concern in the world. Lockhart was formerly with the new car division of Nute Motor company, territorial distributor of Hudson and Essex cars.

Franklin Turns Deficit To Profit During 1925

SYRACUSE, April 26.—H. H. Franklin Mfg. Co. in its consolidated income account for the year ended Dec. 31, 1925, shows net income of \$1,983,103, which compares with a deficit of \$811,435 in the year previous. Surplus for the year after payment of preferred dividends was \$1,534,274.

Current assets increased in 1925 to \$7,017,340 as compared with \$5,756,174 at the close of 1924. Cash at \$808,074 was a reduction from \$1,468,219; sight drafts increased to \$291,042 from \$164,985; receivables were \$384,192 as against \$366,965, and inventory increased to \$5,534,032 from \$3,756,005. Current liabilities totaled \$984,307 in 1925 as against \$1,280,835 at the close of 1924. Total assets were \$17,877,186 as against \$16,390,778.

DETROIT, Mich., April 26.—To the present line of roadsters, Dodge Brothers, Inc., has added a new two-passenger sport model listing at \$880. This model differs from the others only in color, upholstery top and nickel trim. Both body and hood are finished in green, relieved with partridge striping, with the rest of the car in baked enamel finish. The upholstery is in grey spanish leather which contrasts with the tan colored folding top. Nickel plated rims on the new bullet type headlights and cowl lights match the silvered radiator shell. Bumpers are furnished front and rear and additional equipment includes automatic windshield cleaner, rear view mirror. Cowl ventilator and natural wood wheels are standard equipment but disk wheels are obtainable at no extra cost.

Ohio Starts 1926 Roads

COLUMBIA, O., April 26.—In all more than 26,000 men will be given work on highway construction projects during the coming summer. This work will start as soon as weather conditions permit and will be pushed as rapidly as possible. Highway construction work involves 950 miles of which 842 miles were left uncompleted when the winter set in and so far this season an additional 108 miles has been contracted for. Of the large force of men required, private contractors will employ about 20,000 and 6,000 will be given work by the Ohio Highway Commission in maintenance work. The total cost of the uncompleted work and not contracts is \$23,671,499. It will be the most active year in the history of road construction in Ohio.

James Valve Promotes Walton

DETROIT, April 26.—T. R. Walton, sales manager of the James Motor Valve Co., has been elected secretary and treasurer of the company, succeeding H. Temple Barber, former secretary, and W. F. Hass, former treasurer, both of whom have been re-elected directors. Other officers re-elected are J. H. James, president, and H. E. Butcher, vice-president, the latter also being vice-president of the Champion Spark Plug Co.

New York March Sales Almost Triple February

Gain Over Third Month of
1925 Is 17 Per Cent, Final
Figures Show

NEW YORK, April 26.—Total passenger car sales in the Metropolitan district in March were 12,290 compared with 3,364 in February and 6,773 in January.

March sales exceeded January and February combined by 2,153 and were 1,623 or 17 per cent more than in March, 1925, according to the monthly new car sales analysis by Sherlock & Arnold.

During the first quarter this year total new car sales of 22,427 exceeded those in the first quarter last year by 5,299 or about 30 per cent.

Sales of higher priced cars in this year's first quarter gained 32 per cent over the same quarter last year, while sales of medium and low priced cars gained about 30 per cent.

The proportion of higher price car sales to total first quarter sales shows only a slight increase this year over the 1925 quarter, from 10.15 per cent to 10.29 per cent.

The large March total was attained despite adverse weather conditions. Although the weather continues cold, April sales are unusually strong and the month should show a good increase over the high total for March.

Dodge Brothers Closes

TORONTO, April 26.—Dodge Brothers of Canada, Ltd., has suspended operations at its Toronto plant and more than 400 employees were rendered unemployed for an indefinite period. At the same

time the Durant Motors Co. of Canada, Limited, also closed, temporarily affecting about 600 men. Both suspensions were made in order that the companies might decide on future operations, following the lowering of duties on incoming motor cars by changes in the tariff.

Ford Reduces Prices

WINDSOR, Ont., April 26.—New prices have been issued by the Ford Motor Co. of Canada, Ltd., as follows:

| | Old Price | New Price | Reduction |
|----------------------|-----------|-----------|-----------|
| Touring | \$440 | \$415 | \$25 |
| Runabout | 410 | 395 | 15 |
| Sport Roadster..... | 625 | 595 | 30 |
| Coupe | 665 | 625 | 40 |
| Tudor | 695 | 650 | 45 |
| Fordor | 755 | 710 | 45 |
| Light Delivery | 435 | 415 | 20 |
| Chassis | 325 | 295 | 30 |
| Truck | 485 | 445 | 40 |

Eaton Buys United Alloy

CLEVELAND, April 26.—C. S. Eaton of Otis & Co. and his associates have acquired control of the United Alloy Steel Co., of Canton, Ohio. The deal involved approximately \$6,000,000. Eaton and his associates also control the Eaton Axle Co., of this city, a large manufacturer of automobile axles. The United Alloy is a pioneer in its field and does an annual business of about \$50,000,000. Considerable of its steel products goes to automobile companies.

General Working Full Time

AKRON, O., April 26.—General Tire & Rubber Co., which curtailed operations at its Akron factory to four days a week last month, has resumed full time schedules. Production of tires and tubes is reported close to capacity. A recent special advertising and sales campaign brought very satisfactory results, according to General officials, despite unfavorable weather conditions.

Wilmer Says Merger Will Not Affect Graham Plans

New President Says Company
Intends to Carry on Policy
As Heretofore

EVANSVILLE, Ind., April 26.—Edward G. Wilmer, newly elected president of Dodge Brothers, following the absorption by that company of the Graham Brothers interests declared here the merger will affect no material departures in the Graham Brothers production or distribution policy. Each industry, while under the control of one president, will retain its separate identity.

"My associates and myself intend to continue to carry out the many projects envisioned by the Graham Brothers of your city, while they were with the organization," Mr. Wilmer said. "The Graham Brothers have always been held in the highest esteem by the Dodge organization and the Dillon-Read company. Their ideas still live in the manner in which the business is expanding. The entire Dodge organization appreciates the splendid opportunity offered in Evans to the growing industry."

As to the future of the local Graham Brothers plant, Mr. Wilmer declared contemplated expansion will be in proportion to general business expansion. The Graham executive staff will work independently of the Dodge Brothers corporation, while allied in co-operative interest.

Mr. Wilmer visited Evansville to confer with Joseph B. Graham, former president of Graham Brothers, and Graham department officials. It was Mr. Wilmer's second visit here as he inspected the Graham plant last November. He announced he will make his home in Detroit.

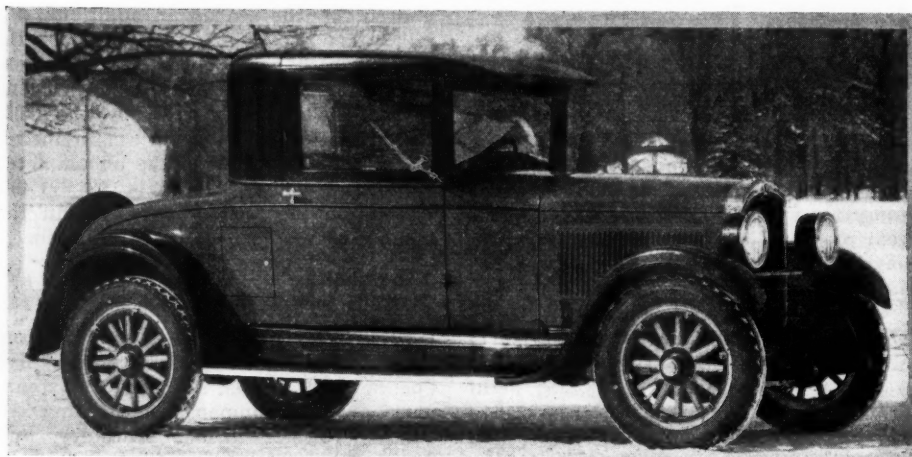
Joseph B. Graham has been in the city for two days to attend the directors' meeting of the Hercules corporation of which he is president. He also attended some of the meetings of the two day national conference of Servel refrigerator officers and stockholders held at the Hercules plant. The Hercules corporation is building Servel refrigerators, gas engines, and bodies for Ford, Chevrolet and Graham Brothers trucks.

The three Graham Brothers will make no definite plans for the immediate future until they have secured a lengthy rest, Mr. Graham declared.

Murray Plan Fails

DETROIT, April 26.—A new plan for reorganizing the Murray Body Corp. will be submitted at a meeting of stockholders, bank and creditor committees which will be held either late this week or early next week. The plan submitted at a recent meeting failed to meet with the approval of all interested.

New Hupmobile Six Coupe



The new body model added to the Hupmobile six line—a three passenger coupe listing at \$1385. There is a folding rumble seat in rear deck with a detachable seat cushion enabling a salesman to use the car for the carrying of merchandise. The interior of the car is upholstered in hand crushed genuine leather and the exterior finish is in a special shade of green Duco

DePaolo Latest Entrant For Indianapolis Race

Baby's Shoes Again Will Be Mascot for 1925 A. A. A. Champion

INDIANAPOLIS, April 26.—Can the baby shoes of Pete DePaolo's young son Tomaso, once more lead Pete to victory in the greatest automobile race in the world, as they did last year? DePaolo himself says he is sure they will. Let the world smile at the thought of baby shoes deciding destinies at a great race, if it will. Pete has his reasons. They have led the way in many a hard-fought contest on brick and board tracks of the country in the last year.

DePaolo is the latest entrant in the Fourteenth Annual International Sweepstakes, to be run at the Indianapolis Motor Speedway, Monday, May 31. Tomaso's little "dogs" led Pete to the top last year, because they rode, one on each front spring of his Duesenberg Special as he finished first in the fastest 500-mile race ever held, his average being 101.13 miles an hour.

DePaolo will pin his faith in the coming race to the same make of car that has brought him so much fame and racing fortune in the last two years. While his mount will be a Duesenberg Special, it will be a brand-new automobile, as the piston displacement changes this year from the 122 of the last three races to 91½.

The little Italian-American won the American Automobile Association racing championship in 1925, defeating such veterans as Tommy Milton, Ralph DePalma, Earl Cooper, Eddie Hearne, Harry Hartz, Frank Elliott and Bennie Hill. DePaolo scored 3,260 points against 1,735 for Tommy Milton, the second man.

Pete got his racing baptism riding as a mechanic with his uncle, DePalma. When the racing cars were changed from double to single seater Pete began driving for himself.

Dave Lewis, who finished second to DePaolo last year in a front-drive Miller Special, already has announced his entry of the same type car. Other entrants announced to date are: Three Schmidt Specials, from Paris, France; two unnamed cars, by Ralph DePalma; a Hamlin front-drive Special, by the Hamlin Motor Company, of Chicago; Harlan Fengler in an unnamed car. Before the entries close May 1 it is expected that every racing driver of prominence in America and several from Europe will have entered.

Gets Chevrolet Train

HASTINGS, Neb., April 26.—Great interest was aroused here recently when the Hastings Chevrolet Sales Co. received a train load of Chevrolet automobiles from the St. Louis Chevrolet fac-

tory. Thirty-six freight cars constituted the train and the cargo of 126 motor vehicles was made up of 40 coaches, 18 landaus, 22 coupes, 10 sedans, 17 touring, 5 roadsters and 14 trucks. C. J. Leinhart is manager owner of the Hastings Chevrolet Co.

Cadillac Pushes Building

DETROIT, April 26.—Work is progressing on the fourth floor of the new \$600,000 administration building of the Cadillac Motor Car company facing Clark avenue in Detroit. The new building is the final unit in the company's plant-building program begun in 1919. Announcement of additional building plans amounting to \$3,000,000 was made by the Cadillac company last November, since which time a new assembly unit 750 by 125 feet has been erected and equipped and is now in operation.

George H. Ralls Is New President of Gabriel Co.



George H. Ralls

CLEVELAND, April 26.—George H. Ralls, who in past years has been sales manager and general manager, succeeds Claude H. Foster as president of the Gabriel Snubber Manufacturing Company. The election of Mr. Ralls comes as a tribute to the success that attended his direction of company affairs as general manager. Claude H. Foster, founder and guiding spirit of the company for more than 15 years, is now chairman of the board of directors, and will continue to be active in the affairs of the company. Other officers elected were R. J. Ketz, treasurer, and David Benjamin, secretary, both of whom have been with the company for more than 10 years. R. J. Dickey is chief engineer in charge of production. The officers, together with J. O. Eaton and S. E. Kline, make up the board of directors.

Tire and Tube Stocks Increase in February

Production Stays Ahead of Shipments, But Both Show Gains

NEW YORK, April 26.—Tire and tube inventories increased further during the month of February, according to the monthly bulletin of The Rubber Association of America, Inc., which has just been issued. Production remained in excess of shipments but both showed a slight increase over January figures.

Production of high pressure inner tubes for February was 3,316,739 against 3,537,722 in January and 3,977,721 in February 1925. Shipments for the three periods were respectively 1,568,305 against 1,706,680 and 2,989,606.

Balloon tire inner tube production in February was 1,801,922 against 1,569,248 in January. Shipments were 1,233,663 compared with 1,085,352 in January.

Production of high pressure cord pneumatic casings was 1,796,189 in February against 1,621,383 in January and 1,996,488 in February, 1925. Corresponding shipment figures were respectively 1,187,990 against 1,045,302 and 1,458,136.

Balloon casing production in February totaled 1,598,246 against 1,416,409 in January, while shipments for the same periods were 1,285,999 and 1,000,490.

Fabric pneumatic casings fell to a new low level of production in February with a total of only 254,537, compared with 402,784 in January and 944,168 in February, 1925. The corresponding figures for shipments were 103,127 casings against 184,951 and 718,626.

Shipments in solid and cushion tires went down to a new low level of 29,629 compared with 34,361 in January and 55,646 in February, 1925. Production was 59,318 compared with 57,928 in January and 53,058 in February, 1925.

Plan 1927 Radio Fair

NEW YORK, April 26.—U. J. Herrmann, managing director of the Radio World's Fair, which will be held in New Madison Square Garden Sept. 13-18, 1926, has sent the following telegram in response to reports that there will be no radio exposition under his management in New York City next year:

"No truth in statement that this is our last New York Show. We will run in 1927 and give our radio friends of the past, present, and future the best money can buy."

This is the response to the statement issued by the newly formed Radio Exhibition Corporation, handling the radio show which will be held in New York simultaneously this year with the Radio World's Fair, that only one exhibition would be held in New York City next fall and indicating that their show would be that one.

DARRELL SELLING GARDNERS



Bobbie Darrell in his record-breaking car

ST. LOUIS, April 26.—Bobbie Darrell, breaker of records when he drove through the streets of Los Angeles for 125 consecutive hours in a Gardner eight sedan, has been appointed Gardner distributor for the southern half of the state of Nebraska. He recently returned from California after shattering the record for the 490-mile course from Los Angeles to Phoenix, making the trip in 10 hours and 20 minutes, or 51 minutes less than the time of Cannon Ball Baker. During the last three days of his endurance trip in Los Angeles, Darrell was attended by a trained nurse, Miss Mabel Anderson, and shortly after the test, Miss Anderson became his wife.

Traffic Survey Made

WASHINGTON, April 26.—Chicago will have twice as many automobiles in 1930 as it did in 1925, according to a forecast of Cook county traffic issued by the Bureau of Public Roads of the U. S. Department of Agriculture here. In its statement making this prediction, the bureau outlined a plan of highway improvement to prevent traffic congestion on the country highways at that time when there will be an average of one car for every 4.86 persons in the city. These figures, bureau officials stated, are not guesses, but careful estimates based on traffic data obtained in Cook county together with population trends and the rate of motor increase during the years 1914 to 1924.

Plan Fewer Brush Sizes

WASHINGTON, April 26. — Finding that the automotive field alone was carrying more than 2,000 sizes of carbon brushes, representatives of carbon brush manufacturers and other electrical brush manufacturers, meeting with government experts and private consuming interests here, have decided upon a reduction of the number of varieties and sizes of carbon commutator brushes and brush shunts for electrical equipment. A simplified practice program decided upon was developed by the Electric Power Club and presented by S. N. Clarkson of Cleveland.

Hupp Reports \$1.22 Share

DETROIT, April 26.—Hupp Motor Car Corp., for the first quarter in 1926, reports net profit \$1,122,308, equal to \$1.22 a share on \$9,138,090 common stock of \$10.00 par value. This compares with \$852,963 or 93 cents a share in the 1925 quarter. First quarter sales increased from \$10,592,746 to \$14,437,693 and surplus from \$624,511 to \$893,855.

Peerless First Quarter Profits Total \$205,802

CLEVELAND, April 26.—Edward Ver Linden, president and general manager of the Peerless Motor Car Corporation has announced that the net profits of the company, after depreciation and taxes for the first quarter, were \$205,802. This profit was made during the month of March.

The company showed no loss during the months of January and February, the slow selling months of the year. Gross sales for the first quarter amounted to \$4,460,878.

Last year for the first quarter gross sales amounted to \$3,349,816 with a loss in net profits of \$280,514. Mr. Ver Linden also stated that sales for the first half of April exceeded the first half of March, the best month in the history of the company.

Takes Chandler Distribution

SAN ANTONIO, Tex., April 26.—T. L. Little, for more than 11 years associated with the sale of Chandler automobiles, has concluded negotiations with the Chandler Motor Car Company of Cleveland, whereby he has obtained the contract to distribute Chandler Six automobiles throughout all of Southwest Texas and Northern Mexico. The Cleveland Motor Sales Company, Inc., T. W. Wheeler, president, distributors of the Cleveland Six, has been named Chandler dealer in San Antonio, and in a short time Mr. Little will announce a complete list of dealers for Southwest Texas and Northern Mexico.

Parts and Accessories Sales Continue Upward

M. & A. M. A. Reports Show Index of 178 in March Compared to 154 in February

NEW YORK, April 26.—Automotive parts and accessory shipments, which in February showed a distinct gain over January, continued to climb in March and all indications point to a further increase in April.

All divisions reporting to the Motor and Accessory Manufacturers' Association showed a March shipment index figure of 178 compared with 154 in February and 132 in January and with January, 1925, business as a base index of 100.

Service equipment shipments reached a monthly record at 205 against 139 in February and 138 in January.

Original equipment at 182 compared with 160 and 137. The March index also compared with a car and truck production index of 186.

Replacement parts shipments in March were 146 against 114 in February and 103 in January, and the accessory index was 167 against 139 and 127.

Some members of the association expect that original equipment business in April may be effected by curtailment in car and truck production. They have noted Hudson's daily schedule reduction from 1,250 to 900 cars and believe that other companies may be planning to curtail output. But they expect that total April shipments to the trade will exceed.

Bill Aids Mail Trucking

WASHINGTON, April 26.—A bill which is expected to give impetus to motor transportation, and at the same time lower the high cost of living, was favorably reported out of the Senate committee on post office and post roads, permitting a 50 per cent reduction in postal rates on farm products, handled by motor transports, mailed directly from farms for delivery at the same post office from which such motor route starts. In order to further foster the support of such service the bill also provides that the postmaster general may allow rural carriers a commission, to be fixed by the postmaster general, on the postage so received for the service, in addition to the regular salary.

Pontiac Dealers Meet

DAVENPORT, Ia., April 26.—Sixteen Iowa and Illinois communities in this territory were represented at the Oakland and Pontiac dealers' meeting at the Blackhawk hotel here at which E. M. Lubeck, Chicago, district sales manager, F. M. McHenry, field representative from the factory, and P. S. Smith, Chicago General Motors Acceptance Corporation, were speakers.

March Production Totals 449,677 Cars and Trucks

Department of Commerce Figures Show Month Second Greatest in History

WASHINGTON, April 26.—Automotive production in the United States and Canada during March totaled 449,677 passenger cars and trucks, compared with production in March, 1925, of 377,252 units, according to production figures announced this week by the U. S. Department of Commerce. The preliminary March production was estimated on April 7 by the National Automobile Chamber of Commerce at 447,185.

Comparing the first three months' production of this year with the corresponding period last year, the figures show that current production is 234,395 units more than last year. During the January-March quarter this year, 1,140,922 passenger cars and trucks were produced, compared with 905,527 vehicles produced the first three months of last year.

The March figures show that there were 398,042 passenger cars manufactured, of which number 379,769 were produced in the United States and 18,273 manufactured in Canada. Truck production for the month was 51,635, of which 47,788 were made in the U. S. and 3,847 in Canada. With one exception the March production is the greatest in the history of the industry, the exception being the month of October, 1925, when 452,486 passenger cars and trucks were produced.

The figures above are based on returns received from 177 manufacturers, 70 of which manufacture passenger cars and 124 making trucks with 17 making both passenger cars and trucks.

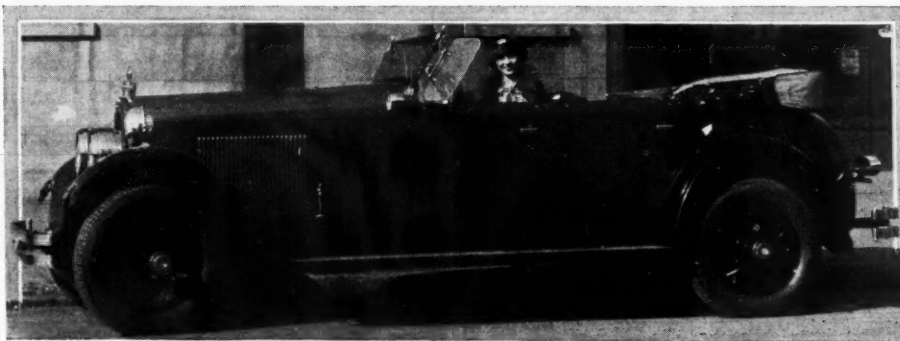
Takes Locomobile Line

BALTIMORE, Md., April 26.—The Goodhue Motor Co., Inc., a new Baltimore concern, has been appointed distributor for Maryland of the Locomobile line and is now showing the latest models at the new quarters of the company at 134-136 West Mount Royal Avenue. The new company is headed by M. S. Goodhue, who has been engaged in the automobile trade since 1910. R. Julian Rozzel is associated with him. The company also has established a service department.

Nash Visits Oregon

PORTLAND, Ore., April 26.—The Portland Nash organization—Wentworth & Irwin, Inc.—outstripped the average Nash dealer throughout the nation in showing a bigger increase in 1925 business as against their 1924 volume. This announcement was made by C. W. Nash of Kenosha, Wis., president of the Nash Motors Corporation, at a banquet held at

MARMON HAS NEW SPEEDSTER



New Marmon four-passenger speedster

the Benson Hotel. The entire Nash organization throughout Oregon and the river counties of Washington was in attendance. Nash was impressed on this Western trip with general business conditions, and for the most part found the country prosperous. Merchants are buying in smaller quantities than before, he said, but this is because they learned the lesson of over buying in 1921.

Peerless Has New Sedan

CLEVELAND, April 26.—The Peerless Motor Car Company has announced the addition of a 4-door DeLuxe Sedan listing at \$1795 to the 116 in. wheelbase, 6-80, 6-cylinder line. This model is similar in construction with the standard 5-passenger Sedan except for the DeLuxe finish which includes walnut panels on the doors, the instrument board also being finished in walnut, mohair velvet upholstery, arm rests for the rear seats and special hardware. Exterior finish is entirely in lacquer, the models produced at the present time being finished in Ohio blue. In addition to the equipment furnished with the other closed models of the Peerless 6-80 line, the DeLuxe Sedan also comes equipped with front bumpers, rear bumperettes and winter front.

Yellow Truck Buys Site

DETROIT, April 26.—Property acquired in the town of Birmingham, adjacent to Detroit, by the Yellow Coach & Truck Mfg. Co. division of General Motors, will be the site of a new general manufacturing plant, according to unofficial statement by General Motors executives. The plant will be in addition to present plants at Chicago, Moline, Pontiac and Detroit, and is required to meet expanding operations of the company. The official statement on the building of the new plant soon to be made is expected to show that the new factories will be general manufacturing buildings in which entire chassis will be built and assembled both for taxicabs and trucks and coaches. There is also probability that engines also will be manufactured there in addition to the continuance of motor operations in the present plants.

INDIANAPOLIS April 26.—A four-passenger speedster in the new 74 series has been announced by the Marmon Motor Car Company. The body is of aluminum with moulding and a belt panel and the paint finish is a two-tone combination with upholstery of hand-buffed leather. Equipment includes fender mirrors, nickel-plated windshield wings, double rear-view mirror, top boot, tonneau lights, three-way tail, stop and backing light, combination cigar lighter and handy lamp. The car provides space between the tire carrier and the back of the body for a trunk and a metal panel in the left front door with a lock operated by the switch key, contains the most used tools. There is also a tool tray underneath the front seat cushions. The side curtains are contained in three of the pockets. The car lists at \$3295.

U. S. Rubber Re-Elects

NEW BRUNSWICK, N. J., April 26.—The board of directors of the United States Rubber Co. was re-elected at the meeting here. Lewis B. Gawtry of New York was the only new member selected. Net income of the company for 1925 was announced to have been \$17,309,870. These re-elected were James S. Alexander, Walter S. Ballou, Nicholas F. Brady, Matthew C. Brush, Middleton S. Burrill, Newcomb Carlton, John W. Davie, James Deshler, James B. Ford, Sir Charles B. Gordon, Francis L. Hine, Ernest Hopkinson, Henry L. Hotchkiss, Samuel M. Nicholson, Homer E. Sawyer and Charles B. Seger.

Gardner Shipments Gain

ST. LOUIS, April 26.—Shipments of Gardner Motor Car Co. in the first quarter of 1926 represented a sales volume of approximately \$1,200,000, an increase of more than 100 per cent over sales for the same period in 1925. The company reports a present daily rate of 30 cars. The dealer organization numbers approximately 400 with more being added. A healthy increase in export business is reported. The financial position is reported as entirely satisfactory, with a ratio of current assets to current liabilities of about seven to one.

Oakland Parts Sales Only \$7.08 Per Car in 1925

Factory Figures Show Replacements on All Cars Lowest in Company's History

PONTIAC, Mich., April 26.—A recent compilation of the service department records of the Oakland Motor Car Company for 1925 revealed that parts sales to Oakland dealers averaged only \$7.08 per car, based on the total number of Oakland cars known to be in operation. As these parts sales included a large volume of accessories, the actual parts used for replacement averaged in reality much less than the per car amount given.

The number of Oakland cars in service totalled 248,658, including all Oakland cars registered on January 1, 1925, plus cars sold during the year. According to R. A. Armstrong, director of service for the company, the low service cost per car is particularly significant, since approximately 20 per cent of these cars are more than five years old. The average parts cost for 1925 is the lowest in Oakland's history, and also compares very favorably with the entire industry, which is estimated to average about \$12 per car for all makes.

"Sixty per cent of the wearing parts in a car are located in the engine," says Mr. Armstrong, "and I believe our low parts cost reflects the design and construction of the Oakland Six power plant.

"Although this low parts sales record is very gratifying to us, another year should see this figure further reduced, due to constant refinements in manufacturing and inspection, plus Oakland's adoption of the harmonic balancer, which has eliminated practically all vibration in the engine."

New Paige-Jewett Dealers

DETROIT, April 26.—The Paige-Detroit Motor Car Company has appointed new dealers as follows:

Lawrence Motors, Green Bay, Wis.; J. B. Gaffney, Madison, Neb.; D. B. Kraus, Wakeeney, Kans.; M. R. Lampman, Colfax, Wash.; Stern Bros., Inc., New York City; Joseph Arky, Kearney, N. J.; Lyndale Auto Service Co., Minneapolis; New-Day Motor Co., Great Falls, Mont.; Reliable Motor Company, Devils Lake, N. D.; Lee Olson, Langford, S. D.; H. M. Mathews, Mullen, Neb.; Williams Garage & Machine Shop, Williams, Ariz.; G. E. Morrison, Bathgate, N. D.; Eastham & Wade, Douglas, Ariz.; G. L. Pledger, Freemont, Neb.; Grant Knox, Madison, S. D.; W. C. Johnson, Wilcox, Ariz.; Essex R. Peters, Fort Huachuca, Ariz.

Arrowhead Service Station, Flagstaff, Ariz.; Staunton Service Garage, Staunton Ill.; McNiff Garage, Hudson, Mass.; O. H. Clark, Williamson, N. Y.; J. H. McCormick, Claudell, Kas.; Louis Toppel, International Falls, Minn.; Helton Motor Co., Williston, N. D.; H. J. Wintersteen, Hartford, S. D.; Charles Masuen, Oyens, Iowa; Leo Wesch, Billings, Mont.; Henry Von Alm, Miranda, S. D.; W. O. Wieland, Waterloo, Iowa; Paige-Jewett Sales Co., Deland, Fla.; A. R. Weaver, Brookings, S. D.; Edw. G. Juster

STUTZ BRANCH HAS USED CAR POLICY THAT WORKS

CHICAGO, April 26.—A system for handling the ever-present used car problem has been developed by the Stutz Chicago Factory Branch, Inc., which is declared by F. D. Cerf, president of the branch company, to be very effective.

A used car department was recently established separate from the other activities of the branch, and John W. McCabe placed in charge of it. Mr. McCabe has been given absolute authority to value all cars submitted for trade-in, after careful inspection has been made, and his valuation is final. There is no appeal either by the salesman who wants to sell the prospect a new car, or the salesmanager interested in the same thing.

The branch will not make a valuation until the prospect has had a demonstration of the new car. Mr. Cerf declares that this practice has eliminated "shoppers" who travel the row from one end to the other in an attempt to find the highest bidder for their old car.

The valuation sheets are made in triplicate by the used car manager, one being filed in that department, one going to the salesmanager and one to Mr. Cerf. These sheets contain a complete statement of the condition of the car in every phase. The valuations usually are made while the prospect is away on the demonstration and are based on the Blue Book figures.

The salesmen, salesmanager and the branch manager have established the rule that the valuation placed on the car by the used car manager shall not be discussed with the prospect. The prospect is told the price allowed, and that ends the discussion so far as the company is concerned. If he insists on arguing the matter, he is told that the Stutz branch is not in the used car business, that the used car manager has placed that value on the car as the one at which he can sell it without loss and that is all there is to it. Mr. Cerf says the prospect sometimes leaves angrily, but that he has lost few sales through the method.

In a number of cases, the demonstration has been so successful and instilled such a desire for the car, that the prospect will keep his old car and buy a new Stutz besides. On occasion, if the proposed trade-in is in excellent condition and it is believed more might be obtained for it than the Blue Book price, the company will display it and sell it if possible for the price asked. In this case, however, the company is not obligated in the car financially. The price obtained, of course, is then turned in on a new Stutz.

Every car bought by the used car department, is either reconditioned or sold for junk. The branch sells absolutely no "as is" automobiles. Many of the reconditioned cars are being bought and resold by used car dealers.

It has been found in the short time that this system has been in operation that the turnover is three times as fast, and that the used car stock has been kept to about 60 per cent of what it was formerly with an equal volume of business. What few sales are lost through the low price offered for the used car, are more than made up in the profit made on the cars accepted, and the elimination of losses on cars that are priced too high.

& R. C. Bromwell, Carmel, Cal.; D. G. Johnson, Harriman, Tenn.; Davis & Ewing Service Garage, Sweetwater, Tenn.; Frierson Service Station, Columbia, Tenn.; Carroll & Burnside, Kettle Falls, Wash.; R. E. Coates, Machodoc, Va.

Honore Robert, St. Hyacinthe, Quebec; J. B. Smith, Linesville, Pa.; Biwabik Garage, Biwabik, Minn.; Peterson Motor Co., Sebring, Ohio; Maynard & Fielding, Centerville, Pa.; Paige-Jewett Motor Car Company, Reading, Pa.; W. H. Loxton, Petrolia, Ont.; Nagel & Schemmel, Alford, Iowa; Hamlet Ave. Garage, Woonsocket, R. I.; B. F. Latham, Marysville, Calif.; Frank P. Arensdorf, Dubuque, Iowa; Half-way Garage, Walpole, Mass.; Johnson & Wickstrom, Iron Mountain, Mich.; H. C. Small's Garage, Fairmont, Minn.; Chadron Paige-Jewett Co., Chadron, Neb.; Inlet Garage, Sea Girt, N. J.; Margeson & Aber, Hammondsport, N. Y.; Webster Garage, Willoughby, Ohio; F. H. Burnap, Corvallis, Oregon; Paige-Jewett Co. of Danville, Danville, Pa.; Howgate-Erickson Co., Philadelphia, Robert Norris, Hanna, Wyo.; C. S. Stanton, Springfield Center, N. Y.; Thos. B. Foster, Delta, Colo.

R. J. Olson, Two Harbors, Minn.; Flat-bush Motor Sales, Brooklyn, N. Y.; A. J.

Kimmel, Joliet, Pa.; Ogden Ave Motor Co., Superior, Wis.; McCook Paige-Jewett Co., McCook, Neb.; Victor Garage, Newcastle, N. B.

Race Drivers Banqueted

LOS ANGELES, April 26.—Automobile race drivers who participated in the big 250-mile Culver City race March 21, were honor guests at a recent banquet held at the Biltmore Hotel, with F. B. Caswell, vice president and sales director of the Champion Spark Plug Co., of Toledo, playing the role of host. Among the drivers present were Bennett Hill, Pete de Paolo, 1925 world's champion; Harry Hartz, Eddie Hearne, Jerry Wonderlich, Frank Elliott, Bob McDonough, Ralph Hepburn, Red Shafer, Norman Batten, Dave Evans, Earl Cooper, and Tommy Milton. Also present were A. M. Young, president of the Culver City Speedway Association, Harry Miller, builder of the Miller racing cars; and Fred Wagner, starter.

American Bosch Plans to Strengthen Radio Selling

Distribution to Be Improved As Results of Meetings in Various Centers

SPRINGFIELD, Mass., April 26.—American Bosch Magneto Corp. is taking steps to strengthen its facilities for distributing its radio sets. Morris Metcalf, treasurer, has returned from an extended trip which took him to the Pacific coast, primarily to study the problem of making the best connections for this line.

Plans for the coming season were taken up in detail with Bosch branches in Chicago, Detroit and San Francisco, and arrangements made to improve distribution in other centers. This involves the appointing of numerous new agents and, in some instances, the separating of the company's radio and automotive lines in a given territory. Wherever practicable, however, these are kept together, it being felt that the radio distributor who has no other strong line to tie up with is at a disadvantage owing to the seasonal fluctuations of the business.

By May 15, it is expected, samples of the new Bosch sets will be in the hands of distributors, and by July 1 it is hoped that regular production will be making good headway.

American Bosch is running strong for the time of year, stocks in the starting and lighting and ignition equipment being accumulated two months ahead of the usual volume, preparatory to the transfer of this business to the Electric Auto-Lite Co. of Toledo, July 1. A good rate of production is being maintained in magnetos, timers and windshield wipers. Night shifts are being worked in some parts of the plant.

Howe Buys Interest

TOLEDO, April 26.—Edwin J. Howe, used car manager and assistant sales manager of the Leonhardt-Geller company, oldest of the Overland and Willys-Knight dealers in Toledo, has purchased a part interest in the company and has been named director and secretary of the company. He has been associated with the company for four years having come to Toledo with six years' experience with the Standard Motor Car company of Mobile, Alabama.

Heffelfinger Leaves Timken

DALLAS, Tex., April 26.—J. M. Heffelfinger, formerly with the Timken Roller Bearing Company as manager at Los Angeles, Chicago, Indianapolis, Cincinnati, Richmond and Dallas, has resigned to accept the position of manager of the Motor Parts Depot, an automotive jobbing house here. He succeeds C. C. Crawford who resigned recently to enter

Oldest Salesman Reminisces

EL PASO, Texas, April 26.—M. L. Burkhead of El Paso has the distinction of being the oldest living automobile salesman in Texas and also of having sold the first automobile in the state. He said:

"In Corsicana, in 1903, I was trying to sell a Cadillac to Dr. J. B. Thomas. I took him out for a two-mile trip and the whole town turned out to see us. The whole front page of the paper was covered with our daring exploit of going two miles out of town in that gas buggy.

"That car was a one-cylinder. The doctor paid me \$1160 for it. It would, when strained to the very limit, go almost 18 miles an hour.

"When we got back to town, the doctor jumped off, and said, 'Ain't she a beauty, Burkhead?'

"It had no lights, no top, no sides; in fact, 'no nothing.'

"Then the doctor asked me if they weren't liable to improve the car in time.

"Say, Doc, I told him, 'there isn't room for any improvements on that boat. What else could they do to it?'

"So the Doc fished out and bought the car, while the whole town cheered."

other lines of business. Mr. Heffelfinger is preperanig to push the activities of the Motor Parts Depot to all sections of the state.

Flint Promotes Solomon

DALLAS, Tex., April 26.—H. F. Solomon has been named general sales manager for the Dallas Flint branch, according to announcement of Irvin M. Kauffelt, regional sales manager of Kansas City. Mr. Solomon assumes his duties immediately. He was formerly manager of the used car department of the Dallas branch. Mr. Solomon has announced C. H. Langdeau, formerly accountant for the Dallas branch, will be assistant sales manager.

Copper Use Increases

NEW YORK, April 26.—The Copper and Brass Research Association reports that more than 245,000,000 pounds a record figure, of copper were consumed by the automobile industry last year in new car construction, replacements and accessories. The increasing preference for closed cars has enlarged the copper requirements of lighting systems, bodies and trim. The growing use of mechanical refinements, such as air filters, tire cleaners, central chassis lubrication and four-wheel brakes also call for increased use of copper and its alloys.

First Miller Test Car Shows Speed of 130.8

Bennett Hill Sets Fast Pace With "Vest Pocket" 91½-Inch Engine

LOS ANGELES, April 26.—In the trial test of the first of the new Miller racers with the 91½ inch maximum piston displacement to be completed at the Miller Engine Works in Los Angeles for the Indianapolis races, Benny Hill developed a speed of 130.8 miles per hour at the Culver City race track. Inasmuch as this was the first trial given the new Miller creations, it can be expected that the 130.8 mark will be considerably exceeded. This is the first published report on the possible speed of the smaller racing chargers prescribed for the Indianapolis event.

The finishing touches are now being applied on the other eight new Miller racers and they will be ready for an early test. Miller and his associates have labored for months with the new cars to give their supreme achievement to the racing world at Indianapolis on May 31.

The new Miller engines are of 90.2 cu. in. displacement with 154 b.h.p. and 7000 possible r.p.m. The bore is 2 3/16 and the stroke 3 in. There are five main bearings, two overhead spur gear driven camshafts, and an integrally counter-balanced crankshafts as on the older models. The engine weighs 290 lbs., or about 100 lbs. less than the 122 in. engine of the same make. There are two valves per cylinder, with one spark plug in center of each cylinder. The turbine supercharger in the new cars is built to drive off the crankshaft, as against the former drive off the camshaft.

A feature of the new cars is easier steering which has been effected with an all ball bearing steering gear. Another feature is a positive lock for the clutch. Dogs dropping in slots in the flywheel prevent any possibility of clutch slipping when car is racing at high speed.

Moon Sales Increase

NEW YORK, April 26.—March was a record month for Moon and Diana sales in this territory, according to H. R. Hunnewell, vice-president of the Manhattan Moon Co., factory branch. In New York, New Jersey, Connecticut and Long Island sales of Moon Sixes and Diana Eights last month increased 102 per cent over the same month last year.

House Passes Road Bill

WASHINGTON, April 26.—The House has passed and sent to the Senate the Dowell Federal Aid bill, providing \$165,000,000 for Federal highway construction for the fiscal years of 1927 and 1928. The measure passed the house with practically no opposition.

TRADE ASSOCIATION ACTIVITIES

TIRE & RIM ELECTS MINCH

Head of Jaxon Steel Products Will Direct Association in 1926

CLEVELAND, April 26.—W. B. Minch, of the Jaxon Steel Products Co., of Jackson, Mich., was elected president of the Tire & Rim Association of America at the annual meeting held here in the Hollenden Hotel. Mr. Minch succeeds J. D. Anderson, of the Fisk Rubber Co., Chicopee Falls, Mass.

The meeting was well attended. Reports set forth activities carried on during the year and indicated the organization is in a flourishing condition and now numbers 45 members.

One of the important matters agreed upon at the annual session was the decision to issue a year book. The first will be published shortly and copies distributed among the members. The book will contain the association's standards of tires and rims for motorcycles, automobiles, trucks and airplanes. Sections of all rims for pneumatic tires will be fully dimensioned, as will inspection tolerances. It will be an excellent guide for the trade.

C. E. Bennett, of Cleveland, who has been a factor in the organization's up-building, was re-elected secretary. B. Darrow, of the Goodyear Tire & Rubber Co., Akron, was elected vice-president; H. W. Kranz, Cleveland Welding Mfg. Co., re-elected treasurer; H. W. Day, Cleveland, re-elected assistant secretary and Merrell E. Clark, New York, re-elected general counsel.

New members of the board are D. H. Fenton, Fisk Rubber Co.; E. O. Fritch, Kelly-Springfield Tire Co.; R. Irodell, General Tire & Rubber Co.

The other directors were re-elected as follows: C. C. Carlton, Motor Wheel Corp.; B. Darrow, Goodyear Tire & Rubber Co.; L. A. Deaver, B. F. Goodrich Co.; J. B. Hale, Firestone Tire & Rubber Co.; H. G. Jackson, Wire Wheel Corp. of America; E. R. Jacobi, Hayes Wheel Co.; W. J. Kirkpatrick, A. Schrader's Sons, Inc.; H. W. Kranz, Cleveland Welding Mfg. Co.; Ford Lawrence, Kelsey Wheel Co., Inc.; Paul Pleiss, Budd Wheel Corp.; S. P. Thacher, U. S. Rubber Co. The next meeting of the association—the regular quarterly one—will be held in Lansing, Mich., July 28.

Traffic Men to Meet

NEW YORK, April 26.—David Beecroft, vice-president of the North Atlantic division, will be chairman of the annual meeting of the National Highway Traffic Association, which will be held April 30, in the Automobile Club of America, 12 East 53rd Street. The list of speakers, with their subjects, follows: "The Trend of Motor Vehicle Legislation," Russell H. Huffman, secretary, Motor Vehicle Conference Committee, National Automobile Chamber of Commerce, New York; "Synchronous Utilization of Highway Transport and Railroad Transportation," George H. Pride, president, Heavy Haulage Co., New York; "Regulation of Pedestrian Traffic," Professor Lewis W. McIntyre, Civil Engineering Department, University of Pittsburgh, Pittsburgh, Pa.; "Metropolitan Traffic Control," Harold M. Lewis, executive engineer, Regional Plan of New York and Its Environs, New York; "The Economic

Field and Future of the Rent-a-Car," P. L. Emerson, president, Yellow Manufacturing Sales Corp., Chicago; "Organizations for Traffic Planning in Municipalities," Arthur H. Blanchard, professor of Highway Engineering and Highway Transport, University of Michigan, and consulting engineer, Michigan State Highway Department, Ann Arbor, Mich.; "The High Cost of Bottlenecks on Highways," G. E. Hamlin, superintendent of repairs, Connecticut State Highway Department, Hartford; "High Speed Highways Required for Economic Transportation," Ernest P. Goodrich, consulting engineer, New York; "Traffic Control Signal Systems at Street Intersections," Col. I. C. Miller, assistant director and traffic director and traffic engineer, Commissioners of the District of Columbia, Washington; "Illumination of Highways," David Beecroft, vice-president, Chilton Class Journal Co., New York; "Aerial Photography as an Aid in Highway Traffic Surveys," Charles F. Keale, Jr., chief engineer, Airmap Corp. of America, New York; "Highway Safety Promoted by Adequate Brakes on Motor Buses and Trucks," David C. Fenner, manager, Public Works Department, International Motor Co., New York.

J. A. Cramer, Buffalo Vice President, Dies



J. A. Cramer

BUFFALO, April 26.—J. A. Cramer, president and treasurer of J. A. Cramer, Inc., distributor and dealer in Dodge Brothers cars in Buffalo and the Buffalo territory, and vice president of the Buffalo Automobile Dealers' Association, died April 20, while attending a meeting of the latter organization in the Hotel Statler. Heart disease caused his death. Mr. Cramer was 55 years old. He was born in Tonawanda, and lived all his life in Buffalo. He was one of the pioneers in the automobile business in Buffalo, having been engaged in it since 1903.

TEXAS CONCLAVE DETAILS FIXED

Speakers Accept Invitations to Appear May 12-14

SAN ANTONIO, Tex., April 26.—Additional acceptances have been received by W. A. "Cap" Williamson, general manager of the Texas Automotive Dealers' Association, from G. V. Orr, president of the Chicago Overland Company; E. J. Poag of the sales department of the Buck Motor Company, Flint, Mich.; A. L. Deane of New York City, vice-president, General Motors Acceptance Corporation, and Dan Moody, attorney general of the State of Texas, all of whom will be on the speaking program at the tenth annual convention of the Texas Automotive Dealers' Association at Hotel Galvez, Galveston, May 12, 13 and 14.

Mr. Orr will speak on "From One Per Cent in 1924 to Four Per Cent in 1925"; Mr. Poag will talk on the potential sales market that prevails in the various sections of Texas; Mr. Deane will take for his subject, "Selling Cars on Time Payments," while Mr. Moody will speak on "The Value of Highways to Communities and to the State."

Members of the Texas Automotive Jobbers Association will attend the Galveston convention in a body. This latter organization had already arranged a meeting to be held in San Antonio on April 17, but changed the date to May 11 in Galveston, in order that the members, the majority of whom belong also to the T. A. D. A., may attend the latter convention.

Memphis Elects Hull

MEMPHIS, April 26.—The Memphis Automobile Dealers' Association has elected Harter B. Hull of the Harter B. Hull Co., Dodge Brothers and Graham Brothers dealer, president to succeed R. B. Price, who has been at the helm for two terms. Mr. Price is from the Southern Motor Co., Cadillac dealers.

E. C. Barwick, of the Price-Barwick Co., Ford dealer, was elected vice president; Hugh Jetton was re-elected treasurer and Thomas H. Smart, Chairman of the Automobile Show Committee.

Joseph Jellerman, Hudson-Essex dealer, St. Louis, made an interesting address at the annual dinner held at Hotel Peabody. Mr. Hull outlined some of his policies and asked the co-operation of dealers and owners.

Boston Boosters Meet

BOSTON, April 26.—"On to Hartford" was the slogan of the April meeting of Automotive Boosters Club, No. 1, of New England. President Charles M. S. Foster sent out a letter embodying the plans and asking for reservations from members planning to attend. More than 50 jobbers' salesmen from Boston sent in cards stating that they would attend, and others went to the place direct.

The evening was given over to a dinner and addresses beginning at 7 o'clock at which Mr. Foster presided. With automotive men from Springfield, Hartford, New Haven, Bridgeport and other nearby cities, as well as some from New York a very good attendance was present.

Texas Tire Dealers Use "Tradein" Sales System

Policy Opens Price War, But Business Volume Climbs to May Proportions

DALLAS, Tex., April 26.—Texas tire buyers and automobile owners generally, are watching with more than passing interest the "rubber price war" which has already resulted in the establishment of the "tradein" policy at many tire houses and reduction in prices at many others.

Whether the manufacturers are behind the new activities in tires in this section of the country is not known, but it is certain the dealers and distributors of General Tires announced a "tradein" policy in all sections of the state simultaneously, and these announcements led to similar action on the part of other dealers who believed the "tradein" policy for tires is just as legitimate as that on automobiles. Some others, not in position to do a "tradein" business, began advertising reduced prices. The movement has grown until now it is possible to trade the old tires for new ones at what motorists consider a good allowance.

When the "tradein" policy was first announced a month ago the motorist who had been viewing with alarm the time when he would have to buy new tires, drove right down to the tire station, traded his old tires in for new ones and in some cases gave notes for the remainder. This pulled most of the tire business over to dealers who had "tradein" policies. Other dealers were forced to follow or lose trade. Still other dealers were forced to make reduction in prices and extend credit or suffer losses in trade. The "tradein" dealers are now advertising their plans extensively and the other dealers are spending money for printers ink announcing reductions from week to week.

The net result is the activities in tire lines in Texas right now are a little greater than they usually are in May, the banner month for the year.

Tire dealers declare the "tradein" policy is logical. They claim they recondition tires and sell them just as the car dealer reconditions used cars and disposes of them. Some of the dealers do not even recondition tires they accept on trades. They sell them on the open market and generally at a profit.

Dealers interviewed concerning the change in the policy of doing business declare they have been able to move large numbers of tires at a profit through the "tradein" system, have been able to satisfy customers and have made a small profit on the used tires sold without reconditioning, kept their vulcanizing plants busy with reconditioning work and made a profit on the jobs turned out. They say if there is any-

Coming Motor Events

Automobile Shows

1927 NATIONAL SHOWS

New York.....Jan. 8-15
Chicago.....Jan. 29-Feb. 5

Fargo, N. D.....July 12-17
Denver, Colo.....Aug. 3-6
New York.....Sept. 13-18
(Radio World's Fair)

Chicago.....Nov. 15-19
(Annual show and convention of National Standard Parts Association.)

Races

Atlantic City, N. J.....May 1, 1926
Charlotte, N. C.....May 10, 1926
Indianapolis, Ind.....May 31, 1926
Altoona, Pennsylvania.....June 12, 1926

COMING FEATURES OF CHILTON
May 6—Morox Aco—Sales and Service Reference Number.

Salem, New Hampshire.....July 5, 1926
Atlantic City, N. J.....July 17, 1926
Altoona, Pennsylvania.....Sept. 6, 1926
Salem, New Hampshire.....Sept. 25, 1926
Atlantic City, N. J.....Oct. 27, 1926
Charlotte, N. C.....Nov. 11, 1926
Los Angeles, Cal.....Nov. 25, 1926

Conventions

Texas Automotive Dealers' Association,
Tenth annual, Galvez Hotel, Galveston,
Tex., May 12-13.

National Motor Rebuilders' & Rebuilders' Association, annual, Indianapolis, May 28-29.

Automobile Body Builders' Association, annual, Hotel Statler, Detroit, June 8-10. Exhibition in connection.

Automotive Equipment Association summer convention, Mount Royal Hotel, Montreal, Canada, June 14-19.

American Electric Railway Association, 45th annual, Cleveland, O. Oct. 4-8. Exhibition in connection.

CLASS JOURNAL PUBLICATIONS

May—Automobile Trade Journal—"Biggest Market" Issue.

thing wrong with that system of doing business they fail to see it.

The "tradein" business at Dallas, Houston, San Antonio and Fort Worth during the last month has been exceptionally heavy, dealers report. The scheme has now been extended to Waco, Austin, Temple, Wichita Falls, Abilene, Galveston, Beaumont, Orange, Corpus Christi, Amarillo, El Paso and some other places. Dealers predict it will soon be prevalent in all sections where tires are offered and if the dealer has no plant for reconditioning tires the used tires will be shipped to the larger cities for reconditioning.

Buys Factory Plant

DUBUQUE, Ia., April 26.—The Yavapai Onyx Mining Corporation, which has a factory here, has obtained the former Goetzinger Wagon company factory in Dyersville, a small town adjacent to this city, and will install machinery for the production of its Onyx gear shift ball. The local plant is unable to maintain schedules to meet demand for the product which has become standard equipment on the Willys-Knight, Stearns Knight and Reo cars as well as recognized special equipment for many other cars. The company was launched here only two years ago, but has established a national market under Joseph A. Kelly, president; James H. Devaney, vice president; J. W. Walsh, secretary, and F. J. Lawlor, director of sales.

Blue Goes to Australia

JANESVILLE, Wis., April 26.—G. N. Blue, assistant comptroller of the Janesville branch factories of the Chevrolet, has been promoted to comptroller of one

of four new Australian branch plants. He has left for New York for a six weeks' training course prior to his departure for Australia from Vancouver on June 2. Mr. Blue began work at Janesville when the Chevrolet plant was established and earned rapid promotion. His immediate predecessor, R. J. Arnold, was made comptroller of the Sao Paulo branch in Brazil, South America, about eight months ago.

Employment Totals Gain

WASHINGTON, April 26.—A seasonal pick-up in employment in the automobile industry, with a slight surplus of workers in the principal automobile centers, is reported in the April survey of employment conditions, announced by the U. S. Employment Service of the U. S. Department of Labor. "The automobile industry as a whole," says the survey, "shows a very satisfactory volume of employment being maintained. This is also true of the plants manufacturing automobile accessories."

LaSage Back in Texas

GRAHAM, Tex., April 26.—R. S. LaSage, president of the LaSage Motor company of Graham, is back on the job selling Fords, Lincolns and Fordsons after some time at Tampico, Mexico, where he recently took over the Ford franchise. He recently took over the Ford franchise in the big Mexican oil city when the Ford Company asked him to invest. At the same time he is reported to have bought the Ford franchise in Havana, Cuba, which had also drifted into the doldrums. Mr. LaSage sold the Tampico franchise before returning to his business here.

April

Prices and Weights of Current Passenger Car Models

SHIP WT. PASS. BODY STYLE. PRICE McFARLAN "6" (Continued)

| | | | |
|-------------|-----|--------------|---------|
| "SV" | | | |
| ..... | 5-p | Brougham 4d. | 3,180 |
| 3850 | 4-p | Coupe | \$3,180 |
| 3850 | 5-p | Sedan | 3,180 |
| ..... | 5-p | Spec. Sedan | 3,180 |
| 3850 | 7-p | Sedan | 3,280 |
| ..... | 5-p | Sub. Sedan | 3,380 |
| ..... | 7-p | Sub. Sedan | 3,480 |

| | | | |
|-------------|-----|-------------|---------|
| "TV" | | | |
| 4000 | 2-p | Roadster | \$5,400 |
| 4600 | 4-p | Sp. Touring | 5,600 |
| 4900 | 4-p | Coupe | 6,720 |
| 4900 | 4-p | Tour. Sedan | 6,720 |
| 5200 | 6-p | Sedan | 6,810 |
| ..... | 7-p | Sedan | 6,810 |
| ..... | 7-p | Spec. Sedan | 6,810 |
| ..... | 7-p | Enc. Sedan | 7,110 |
| ..... | 7-p | Sub. Sedan | 7,110 |
| 5200 | 7-p | Town Car | 9,000 |

| | | | |
|---------------------|-----|---------------|---------|
| "Straight 8" | | | |
| ..... | 2-p | Roadster | \$2,650 |
| ..... | 4-p | Roadster | 2,900 |
| ..... | 5-p | Touring | 2,650 |
| ..... | 7-p | Touring | 2,750 |
| ..... | 5-p | Sedan | 3,180 |
| ..... | 5-p | Sub. Sedan | 3,380 |
| ..... | 7-p | Sedan | 3,280 |
| ..... | 7-p | Sub. Sedan | 3,480 |
| ..... | 4-p | Coupe | 3,180 |
| ..... | 5-p | Coach Brough. | 3,180 |
| ..... | 5-p | Town Car | 4,600 |

| | | | |
|---------------|-----|---------------|---------|
| MARMON | | | |
| "74" | | | |
| ..... | 4-p | Speedster | \$3,295 |
| 3827 | 2-p | Speedster | 3,295 |
| 3604 | 5-p | Phaeton | 3,295 |
| 3704 | 7-p | Touring | 3,295 |
| 4080 | 5-p | Std. Brougham | 3,295 |
| 3983 | 2-p | Std. Coupe | 3,295 |
| 3937 | 4-p | Victoria | 3,295 |
| 4065 | 5-p | Sedan | 3,295 |
| 4243 | 7-p | Sedan | 3,370 |
| 4080 | 5-p | Spec. Brough. | 3,395 |
| 4065 | 5-p | Spec. Sedan | 3,395 |
| 4243 | 7-p | Spec. Sedan | 3,470 |
| 4031 | 5-p | Sedan De Luxe | 3,775 |
| 4175 | 7-p | Sedan De Luxe | 3,850 |
| 4100 | 5-p | Sedan Lim. | 3,900 |
| 4215 | 7-p | Sedan Lim. | 3,975 |

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|-------------------|-----|----------------|---------|
| MOON | | | |
| Series "A" | | | |
| 2600 | 5-p | Roadster | \$1,395 |
| 2560 | 5-p | Touring | 1,195 |
| 2720 | 5-p | Cab. Roadster | 1,595 |
| 2710 | 5-p | DeL. Brougham | 1,395 |
| 2860 | 5-p | DeL. Sedan 4d. | 1,545 |
| London | | | |
| 3270 | 5-p | Sp. Touring | \$1,985 |
| 3290 | 7-p | Touring | 1,985 |
| 3590 | 5-p | Petite Sedan | 2,540 |

| | | | |
|------------------|-----|----------------|---------|
| NASH | | | |
| "Special" | | | |
| 2870 | 2-p | Roadster | \$1,115 |
| 2960 | 5-p | Touring | 1,135 |
| 3030 | 2-p | Business Coupe | 1,165 |
| 3120 | 5-p | Sedan 2d. | 1,215 |
| 3170 | 5-p | Sedan | 1,315 |
| 3270 | 5-p | Sedan 4d. | 1,445 |

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|------------------------|-----|-----------|---------|
| "Advanced" | | | |
| (121 in. W. B.) | | | |
| 3390 | 4-p | Roadster | \$1,475 |
| 3400 | 5-p | Touring | 1,340 |
| 3550 | 5-p | Sedan 2d. | 1,425 |
| "Advanced" | | | |
| (127 in. W. B.) | | | |
| 3480 | 7-p | Touring | \$1,490 |
| 3640 | 4-p | Victoria | 1,790 |
| 3750 | 5-p | Coupe 4d. | 1,990 |
| 3830 | 7-p | Sedan | 2,090 |

| | | | |
|----------------|-----|--------------|-------|
| OAKLAND | | | |
| "6" | | | |
| 2600 | 4-p | Sp. Roadster | 1,175 |
| 2500 | 5-p | Touring | 1,025 |
| 2640 | 5-p | Coach | 1,095 |
| 2615 | 3-p | Landau Coupe | 1,125 |
| 2765 | 5-p | Sedan | 1,195 |
| 2885 | 5-p | Landau Sedan | 1,295 |

| | | | |
|-------------------|-----|---------------|-------|
| OLDSMOBILE | | | |
| "30" | | | |
| 2235 | 5-p | Touring | \$875 |
| ..... | 4-p | DeL. Roadster | 975 |
| 2445 | 5-p | DeL. Touring | 980 |
| ..... | 5-p | Coupe | 925 |
| 2460 | 5-p | Coach | 950 |
| ..... | 2-p | De Luxe Coupe | 990 |
| 2660 | 5-p | De Luxe Coach | 1,040 |
| 2535 | 5-p | Sedan | 1,025 |
| 2735 | 5-p | De Luxe Sedan | 1,115 |

| | | | |
|-----------------|-----|---------------|-------|
| OVERLAND | | | |
| "91" 4 | | | |
| 1919 | 5-p | Touring | \$495 |
| 2202 | 5-p | Std. Sedan 2d | 595 |
| 2205 | 5-p | Sedan De Luxe | 695 |

SHIP WT. PASS. BODY STYLE. PRICE OVERLAND (Continued)

| | | | |
|---------------|-----|---------------|-------|
| "93" 6 | | | |
| 2395 | 5-p | Touring | \$895 |
| 2443 | 5-p | Std. Sedan | 895 |
| 2584 | 5-p | Sedan De Luxe | 1,095 |

| | | | |
|------------------------|-----|-------------|---------|
| PACKARD | | | |
| "6" | | | |
| (126 in. W. B.) | | | |
| 3643 | 4-p | Roadster | \$2,785 |
| 3653 | 5-p | Touring | 2,585 |
| 3595 | 4-p | Sp. Touring | 2,750 |
| 3753 | 4-p | Coupe | 2,585 |
| 3937 | 5-p | Sedan | 2,585 |

| | | | |
|------------------------|-----|------------|---------|
| (133 in. W. B.) | | | |
| 3793 | 7-p | Touring | \$2,785 |
| 4043 | 7-p | Sedan | 2,785 |
| ..... | 5-p | Club Sedan | 2,725 |
| 4133 | 7-p | Sedan Lim. | 2,885 |

| | | | |
|------------------------|-----|-------------|---------|
| "8" | | | |
| (136 in. W. B.) | | | |
| 4060 | 4-p | Runabout | \$3,950 |
| 4090 | 5-p | Touring | 3,750 |
| 4023 | 4-p | Sp. Touring | 3,900 |
| 4242 | 4-p | Coupe | 4,650 |
| 4628 | 5-p | Sedan | 4,750 |
| ..... | 2-p | Coupe | 5,775 |

| | | | |
|------------------------|-----|------------|---------|
| (143 in. W. B.) | | | |
| 4199 | 7-p | Touring | \$3,950 |
| ..... | 5-p | Club Sedan | 4,890 |
| 4655 | 7-p | Sedan | 5,000 |
| 4710 | 7-p | Sedan Lim. | 5,100 |

| | | | |
|------------------------|-----|---------------|---------|
| PAIGE | | | |
| "6-72" | | | |
| (125 in. W. B.) | | | |
| ..... | 5-p | Std. Sedan | \$1,495 |
| ..... | 5-p | Sedan De Luxe | 1,670 |
| ..... | 4-p | Cab Roaster | 2,295 |
| ..... | 7-p | Sedan | 1,995 |
| ..... | 7-p | Limousine | 2,245 |

| | | | |
|-------------------------|-----|----------|---------|
| (115 in. W. B.) | | | |
| ..... | 5-p | Brougham | \$1,295 |
| PEERLESS | | | |
| "6-72" | | | |
| (126½ in. W. B.) | | | |
| 3175 | 5-p | Touring | \$1,895 |
| 3425 | 5-p | Coupe | 2,295 |
| 3500 | 5-p | Sedan | 2,395 |

| | | | |
|-------------------------|-----|---------------|---------|
| (133½ in. W. B.) | | | |
| 3275 | 2-p | Roaster | \$2,195 |
| 3300 | 7-p | Sp. Touring | 1,995 |
| 3700 | 7-p | Sedan | 2,595 |
| 3825 | 7-p | Limousine | 2,695 |
| 3575 | 5-p | De Luxe Sedan | 2,795 |
| 3650 | 7-p | De Luxe Sedan | 2,995 |

| | | | |
|---------------|-----|---------------|---------|
| "6-80" | | | |
| 2800 | 5-p | Phaeton | \$1,395 |
| ..... | 5-p | Roadster | 1,495 |
| 2950 | 5-p | Sedan | 1,495 |
| 3140 | 5-p | Std. Sedan | 1,595 |
| 3140 | 5-p | De Luxe Sedan | 1,795 |

| | | | |
|---------------|-------|----------------|---------|
| "8-69" | | | |
| 3675 | ..... | Roadster | \$2,995 |
| 3950 | 5-p | Sedan | 3,495 |
| 4025 | 7-p | Sedan | 3,595 |
| 4100 | 7-p | Ber. Limousine | 3,795 |

| | | | |
|---------------------|-----|---------------|---------|
| PIERCE-ARROW | | | |
| "80" | | | |
| 3205 | 2-p | Runabout | \$2,895 |
| 3260 | 4-p | Phaeton | 3,095 |
| 3355 | 7-p | Phaeton | 2,895 |
| 3430 | 5-p | Coach 2d. | 3,150 |
| ..... | 5-p | Coach 4d. | 3,250 |
| ..... | 7-p | Coach | 3,350 |
| ..... | 7-p | Lim-Coach | 3,450 |
| 3335 | 4-p | Coupe | 3,695 |
| 3365 | 4-p | Coupe Landau | 3,820 |
| 3440 | 5-p | Sedan | 3,895 |
| 3560 | 7-p | Sedan | 3,995 |
| 3615 | 7-p | Enc. Dr. Lim. | 4,045 |

| | | | |
|-------------|-----|---------------|---------|
| "33" | | | |
| 4350 | 2-p | Runabout | \$5,250 |
| 4500 | 4-p | Touring | 5,250 |
| 4590 | 7-p | Touring | 5,250 |
| 4730 | 3-p | Coupe | 6,800 |
| 4800 | 4-p | Sedan | 6,900 |
| 4960 | 7-p | Sedan | 7,000 |
| 4750 | 4-p | Coupe Sedan | 6,900 |
| 4730 | 6-p | Brougham | 6,800 |
| 4850 | 7-p | Limousine | 7,000 |
| 5060 | 7-p | Enclosed Lim. | 7,000 |
| 4780 | 7-p | French Lim. | 7,000 |
| 4730 | 6-p | Landaulet | 7,000 |

| | | | |
|----------------|-----|-------|-------|
| PONTIAC | | | |
| 2270 | 2-p | Coupe | \$825 |
| 2335 | 5-p | Coach | 825 |

| | | | |
|--------------|-----|-------------|---------|
| REO | | | |
| "T-6" | | | |
| 3375 | 2-p | Roadster | \$1,665 |
| 3182 | 5-p | Sp. Touring | 1,395 |
| 3365 | 2-p | Coupe | 1,495 |
| 3365 | 2-p | Spec. Coupe | 1,565 |
| 3515 | 5-p | Sedan 4d. | 1,565 |
| 3565 | 5-p | Spec. Sedan | 1,745 |

SHIP WT. PASS. BODY STYLE. PRICE REVERE

| | | | |
|-------------|-----|--------------|---------|
| "25" | | | |
| 3900 | 2-p | Sp. Roadster | \$2,750 |
| 3975 | 4-p | Speedster | 2,750 |
| 4050 | 5-p | Touring | 2,750 |
| 4300 | 5-p | Sedan | 3,800 |

| | | | |
|------------|-----|-----------|---------|
| "M" | | | |
| 3700 | 2-p | Roadster | \$3,200 |
| 3800 | 4-p | Sportster | 3,200 |
| 3970 | 5-p | Touring | 3,200 |
| 4400 | 5-p | Sedan | 4,000 |

| | | | |
|---------------------|-----|----------------|---------|
| RICKENBACKER | | | |
| "E" | | | |
| 3038 | 5-p | Touring | \$1,750 |
| 3068 | 7-p | Touring | 1,795 |
| 2953 | 4-p | Roadster | 1,795 |
| 3116 | 5-p | Coupe-Sedan | 1,895 |
| 3202 | 5-p | Brougham | 1,895 |
| 3092 | 4-p | Coupe Roadster | 1,920 |
| 3040 | 4-p | Coupe De Luxe | 1,995 |
| 3317 | 5-p | Sedan | 2,095 |
| 3353 | 7-p | Sedan | 2,195 |

| | | | |
|--------------|-------|----------------|---------|
| "B-8" | | | |
| 3227 | 4-p | Roadster | \$2,195 |
| 3315 | 5-p | Touring | 2,150 |
| 3355 | 7-p | Touring | 2,195 |
| ..... | 4-p | Sup. Sp. Road- | |
| ..... | ..... | ster | 3,250 |
| 3445 | 5-p | Coupe Sedan | 2,095 |
| 3486 | 5-p | Brougham | 2,295 |
| 3345 | 4-p | Coupe Roadster | 2,320 |
| 3440 | 4-p | Coupe DeLuxe | 2,395 |
| 3603 | 5-p | Sedan | 2,495 |
| 3640 | 7-p | Sedan | 2,595 |
| ..... | 4-p | Sup. Sp. Sedan | 5,000 |

| | | | |
|------------------|-----|------------------|---------|
| ROAMER | | | |
| "6-50-55" | | | |
| ..... | 5-p | Spec. Tourer | \$1,295 |
| ..... | 5-p | Spec. Sp. Tourer | 1,395 |
| ..... | 2-p | Bus. Coupe | 1,395 |
| ..... | 5-p | Coupe | 1,395 |
| ..... | 5-p | Sedan DeLuxe | 1,695 |

| | | | |
|-----------------|-----|-----------|---------|
| "6-54-E" | | | |
| ..... | 4-p | Roadster | \$2,385 |
| ..... | 4-p | Tourer | 1,985 |
| ..... | 4-p | Sport | 2,285 |
| ..... | 7-p | Tourer | 2,285 |
| ..... | 3-p | Cabriolet | 2,750 |
| ..... | 5-p | Sedan | 2,950 |

| | | | |
|---------------------------------|-----|-----------|---------|
| "4-75-E" (128 in. W. B.) | | | |
| "Custom Built" | | | |
| ..... | 2-p | Speedster | \$3,485 |
| ..... | 3-p | Sport | 3,285 |
| ..... | 4-p | Tourer | 2,985 |

| "8-88" (138 in. W. B.) | | | |
|------------------------|-----|-------------|---------|
| ***** | 4-p | Roadster | \$2,750 |
| ***** | 5-p | Sport | 2,750 |
| ***** | 5-p | Tourer | 2,495 |
| ***** | 7-p | Tourer | 2,585 |
| ***** | 2-p | Speedster | 2,985 |
| ***** | 5-p | Sedan | 1,995 |
| ***** | 3-p | Cabriolet | 2,950 |
| ***** | 5-p | Spac. Sedan | 2,485 |

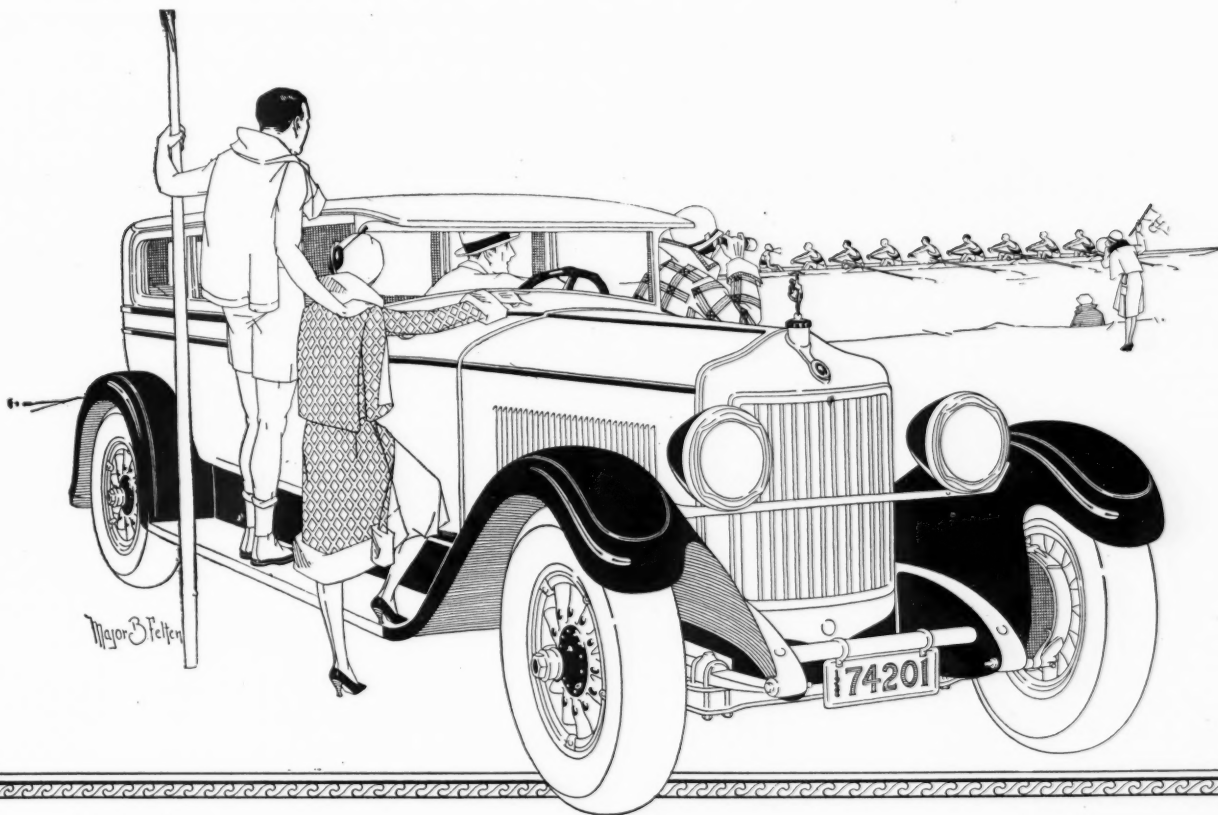
Mechanical Specifications of Current Passenger Car Models

This list comprises cars distributed on a national basis

| MAKE AND MODEL | | | ENGINE | | | | | | | | | | ELECTRICAL SYSTEM | | REAR AXLE | | BRAKES | | Steering Gear—Type and Make | | Chassis Lubrication—Type and Make | | ABBREVIATIONS—NAMES OF MFRS. OF STOCK PARTS | | | | | |
|---------------------|-----------|-------------------|----------------|-----------------|------------|---------------------|-------------------|----------------|-----------------|-------------------|---------------|----------------|-------------------|------------|--------------|-------------------------------|----------------------|---------------|-----------------------------|---------------|-----------------------------------|------------------------|---------------------------------------------|-------------------------|------|------|-------|------------------|
| Wheel Base (Inches) | Tire Size | Decimals-Balloons | Make and Model | Number of Cyls. | Rated H.P. | Piston Displacement | Valve Arrangement | Camshaft Drive | Piston Material | Crankshaft Vib'n. | Oiling System | Cooling System | Radiators | Carburetor | Air Cleaner? | Generator and Ignition System | Clutch—Type and Make | Gear Set—Make | Universals—Type and Make | Type and Make | Gear Ratio | Foot—Type and Location | Hand—Type and Location | 4-Wheel Type = Optional | | | | |
| 108 | 30x4 75 | | Alax..... | 6-3x4 | 21.6 | 170 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | A-L. | P B&B. | Own. | f-Thr. | 1/4 | 4.77 | B-F. | E-T | Ross | S-50 | Pr-Al | A-K—Atwater-Kent |
| 120 | 33x6 00 | | Asperon..... | 6-3x4 1/4 | 24.4 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 130 | 33x6 20 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 140 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 150 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 160 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 170 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 180 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 190 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 200 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 210 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 220 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 230 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 240 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 250 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 260 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 270 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 280 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 290 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 300 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 310 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 320 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 330 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 340 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 350 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 360 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 370 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 380 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 390 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 400 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 410 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 420 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 430 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 440 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 450 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 460 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 470 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 480 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 490 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 500 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 510 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 520 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 530 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 540 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 550 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 560 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 570 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 580 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 590 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 600 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 610 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 620 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 630 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 640 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 650 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 660 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 670 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc. | Mec. | m-Spl. | 1/4 | 5.10 | B-F. | E-T | Ross | S-48 | Pr-Al | A-L—Auto-Lite |
| 680 | 33x6 25 | | Asperon..... | 6-3x4 1/4 | 21.6 | 204 | 1 | He. | Cl. | 1 | P | Pu. | N | Str. | N | N | Remy. | P Roc | | | | | | | | | | |

| | | | | | |
|---------------------------------------|-----------------------------------|----------------------------------|--------------------------------------|----------------------------------------------------------------------|---------------------------------------|
| KEY TO SYMBOLS | Ci -Cast iron | G -Head and side | L-L head | PC -Pressure to all crankshaft and connecting rod bearings | Sep -Separate |
| -At extra cost | Cm -Central magazine | H -Grease cups | m -Metal | PF -Full pressure to all bearings | SP -Splash (lubricator) |
| -Balloons at extra cost | Co -Chain; Overhead shaft | Hr -Horizontal (valves) | M -Mechanical | PK -Full pressure to crankshaft, connecting rods and camshaft | Sp -Spur gear (camshaft drive) |
| -Semi-floating | Cu -Oil and grease cups | Hd -Hydraulic (brakes) | N -None | PS -Splash with pressure bearings | Spe -Special make |
| $\frac{1}{2}$ -Three-quarter floating | D -Multiple disk | He -Helical gear | N-Platform (rear springs) | Q -Quarter elliptic | Sta -Standard |
| A -Air | E -Elliptic | I -In head | O -Optional (brakes) | R -Rectifier | T-T head |
| Al -Aluminum | E-F -External four wheels | Int -Integral | O-Special type (rear springs) | Se -Screw | Th -Thermo-syphon |
| B -Ball | E-R -External rear wheels | I-F -Internal rear wheels | Oc -Oil cups | V -Valve | V-Cantilever |
| B-P -Ball pin joint | E-E -External transmission | I-R -Internal rear wheels | OG -Oil and Grease Cups | Var -Varying | X -X-leve valve |
| B-O -Bevel Gear | F -Floating | K -Cone | OW -Oil cups with wick feed | Y -Yoke | |
| BO -Bevel Gear | F1 -Full floating | | P -Pressing gun | | |
| Ch -Chain | | | | | |

(Continued on page 48)



16 MORE GREAT FACTORIES YIELD TO THE STRAIGHT EIGHT PRINCIPLE



THE prediction comes true. Sixteen more great engineering groups yield to the Straight Eight principle. For the handwriting is on the wall, or rather it is *on the hills and on the highways*, and engineers everywhere perceive it—the *Straight Eight is the most perfect motor the automobile industry has produced to date.* ¶ So now a total of 27 of the world's famous factories here and abroad (fifteen of them are in the United States) are building Straight Eights. And if you, Mr. Dealer, intend to win and hold a sales leadership in your community you must handle *some make of Straight Eight.*

5-PASSENGER SEDAN

\$1995

Enclosed Models of
Various Types up to \$2195

DIANA
THE *LIGHT* STRAIGHT EIGHT

Let me tell you about Diana, the first *Light Straight Eight*. Diana also offers Simplified Control, the Easiest Steering in America, Safety Vision and the patented Composite-Steel Body. Write me today. Faithfully,

Alvin Macdonald
President

Built by the MOON MOTOR CAR COMPANY, St. Louis

[illegible]

KEY TO SYMBOLS
 -At extra cost
 -Balloons at extra cost
 %—Semi-floating
 %—Three-quarter floating
 A—Air
 Al—Aluminum
 B—Semi-steel
 B-B—Both internal and external four wheels
 BO—Bevel Gear Overhead shaft
 Ch—Chain

L—L head
m—Metal
M—Mechanical
N—None
N—Optional (rear springs)
N—Optional (brakes)
O—Special type (rear springs)
o—Oil cups
OG—Oil and Grease Cups
ow—Oil cups with wick feed
P—Single plate
P—Present

PC—Pressure to all crankshaft and connecting rod bearings
PPE—Full pressure to all bearings
PK—Pressure to crankshaft, connecting rods and camshaft bearings
PS—Splash with pressure
Pu—Pump
Q—Quarter elliptic
R—Rectifier
S—Semi-elliptic

Sp—Splash (lubrication)
Sp—Spur gear (camshaft drive)
Spe—Special make
Sta—Standard
T—T head
Th—Thermo-syphon
V—Cantilever
Var—Varies
X—Sleeve valve
Y—Yes
Z—Ballrods on closed models

U-P—Universal Products
W-G—Warner Gear
Wag—Wagner
War—Warner
Wat—Watford
Wes—Westinghouse
W-M—Willys-Morrow
Wis—Wisconsin
Ze-Zerk
Zen—Zenith



Glare Lies in Wait on Every Road to Take its Toll

AND until every car is equipped to give the kind of light that flatlites give, glare will *continue* to take its toll.

More and more car owners are coming to realize this and flatlite dealers are going to make a lot of money this year equipping cars with either flatlite reflectors or headlamps.

If you would like to share in the profits, mail the coupon **TODAY**.

flatlites bring daytime safety to nighttime driving

flatlite

THE AMERICAN FLATLITE CO.

Reading Road at Dandridge Street

Cincinnati, Ohio

Dept. A.

Gentlemen: Please send full trade particulars on flatlite.

Name _____

Address _____



BOTH ends of the ordinary type of flap are fitted over the valve stem of the inner tube, establishing the fixed length of the flap, but it is necessary for the flap to be longer than the rim circumference in order to allow it to pass over the rim when mounting tire.

During inflation of the inner tube, the flap attempts to contract (contrary to popular conception, flaps do not expand during inflation but attempt to contract) and adjust itself to the rim circumference. But the circumference of the ordinary overlong flap cannot be decreased sufficiently to permit it to always ride centrally between the beads of the tire because both ends are fitted over valve stem. In an endeavor to take up its surplus length, the flap frequently is forced to wrinkle, crease and side slip off the rim and up the side wall of the tire into the flexing area.

This action exposes the inner tube to the edges of the tire beads and rust on the rim and results in chafing, tube pinching, strain on valve stem causing leaky valves, rim cutting, freezing to the rim, difficulty in demounting, etc.

Avoid
the squirming
FLAP

that has been *Biting*
your *Inner Tubes*



LICENSED UNDER BEANEY PATENTS

Note that the two self-adjusting ends, opposite the valve stem, overlap and slide on one another in perfect alinement, guided by the loops. During inflation of inner tube the ends slide over one another to permit the flap to contract and to fit smoothly the tire, tube and rim.

Some Advantages

The Beaney Double Self-Adjusting Flap eliminates valve strain . . . It reinforces valve stem and aids balance of the tire . . . It fits contour of tire, tube and rim without wrinkling or creasing . . . It is a ring-shaped flap, which is the proper shape . . . It is the only double self-adjusting endless flap, with two independently sliding ends . . . It expands and contracts and rides centrally . . . It prevents inner tube from becoming exposed to beads of tire and to rust on rim . . . It prevents friction, chafing, pinching, valve strain, rim cutting, difficulty in demounting, etc., etc. . . . It can be used in either Clincher or Straight Side Tires on any type rim.

To Tire Dealers

One of the advantages to the dealer is the elimination of approximately twenty standard sizes, requiring a smaller investment in stock with more frequent turn-overs and a greater margin of profit.

Hole for Valve Stem

by using the ring shaped

BEANEY
SELF-ADJUSTING
TIRE FLAP

Manufacturers Licensed Under Beaney Patents.
Send all inquiries to

Lee Tire and Rubber Co., Conshohocken, Pa.
Kelly-Springfield Tire Co., 250 West 57th St., New York City
Dunlop Tire and Rubber Goods Co., Ltd., Toronto, Ontario
Sole Distributors for Canada

Another great
INDIA Improvement



*Cooling off Bus Tires
 at a California Bus Stop*



Heat from high speed has ruined more tubes than have punctures and hard wear.

INDIA'S True-Blue (HEAT-PROOF) Inner Tube with the Sure-Vulc Splice is the first to successfully overcome this "burning up" of tubes under high-speed conditions.

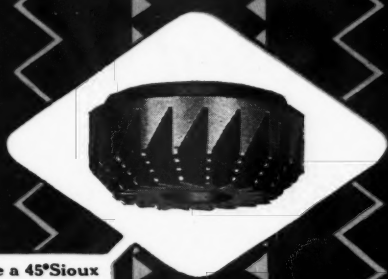
This new type of tube developed by INDIA makes INDIA tires for passenger cars or heavy service give even greater records of uninterrupted mileage.

And INDIA'S exclusive dealer franchise becomes even more profitable than in the past. If you're beginning to get "INDIA-WISE"—better wire about territory.

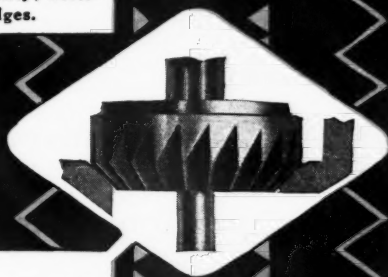
INDIA
 TRUE BLUE
HEAT PROOF
 INNER TUBE



INDIA TIRE & RUBBER CO., AKRON, OHIO



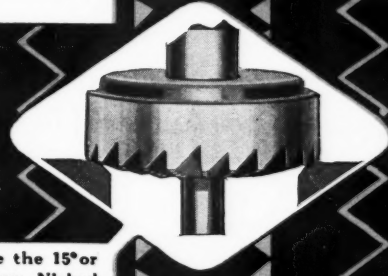
1 Use a 45° Sioux Valve Seat **ROUGHING** Reamer to remove hard glazed surface easily, smoothly, without ridges.



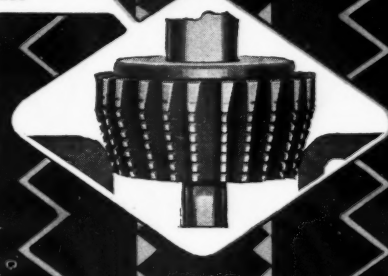
2. Use the 45° Sioux Finishing Reamer very lightly.



3. Lap the valve lightly with fine compound to get an impression of valve seat on valve face.



4. Use the 15° or 75° Sioux Nicked Tooth Valve Seat Reamer--or both--to bring valve seat to center of valve face



An Old Problem Happily Solved

IN reaming valve seats mechanics often find difficulty in centering the reamer over an uneven guide hole. Use oversize pilot stem and recut valve seat to get it into proper alignment with the guide hole. The seat is then usually larger on one side than on the other. Use the 15° or 75° reamer, or both, to bring seat back to its original condition.

For the most accurate job, proceed as indicated in the illustrations to the left.

The **NEW Nicked Tooth Feature** of Sioux 15° and 75° Valve Seat reamers lessens resistance of cutting points, eases up the work, produces a better finish, lengthens life of reamer and *absolutely eliminates chattering!*

Order 15° about same size as valve head and 75°, in most cases, about 1/8" smaller.

Sioux Pilot Stems can be obtained in .001, .002, .003 and .004 oversize or undersize on any size at same prices. To assure a perfect job and prevent reamer from wobbling or traveling, use a stem that fits snugly in guide hole.

Your Jobber Sells Them

ALBERTSON & CO.

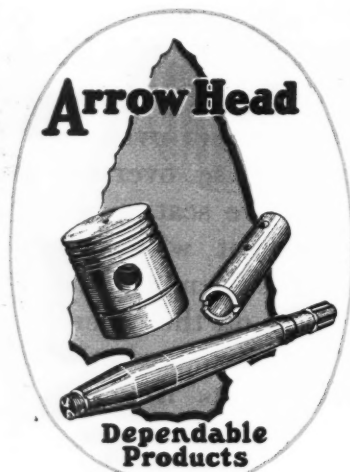
SIoux CITY, IA.

Will Pins Inspected in This

Here is the invariable inspection practice on piston pins at the Arrow Head factory. Like the chart we recently printed showing our piston inspection, to the engineer this will clearly indicate how far Arrow Head goes to produce piston pins that fit Arrow Head or any pistons to prescribed standards.

Arrow Head piston pins are uniformly finished within one ten-thousandth of an inch for size, taper and roundness. The engine manufacturer can bore all pinholes to one standard size. In equipment or replacement, his stocks and operations attain maximum simplicity.

**Electrically and Uniformly Heat Treated
To Proper Specification.**



Each genuine Arrow Head part is marked with an Arrow Head.

Arrow Head's most complete and flexible up-to-date line assures quick service on the 3,500 most-called-for fits and applications, including practically "all motors, all years, all models."

You may wish to check the pistons and pins you use by these Arrow Head standards. We frequently do so to assure ourselves that Arrow Head pistons and pins lead in accuracy and uniformity. To motor builders everywhere, Arrow Head's advanced practice in piston and in manufacture to any formulae is available for either equipment or replacement. However rigid your latest specifications, refer them to Arrow Head.

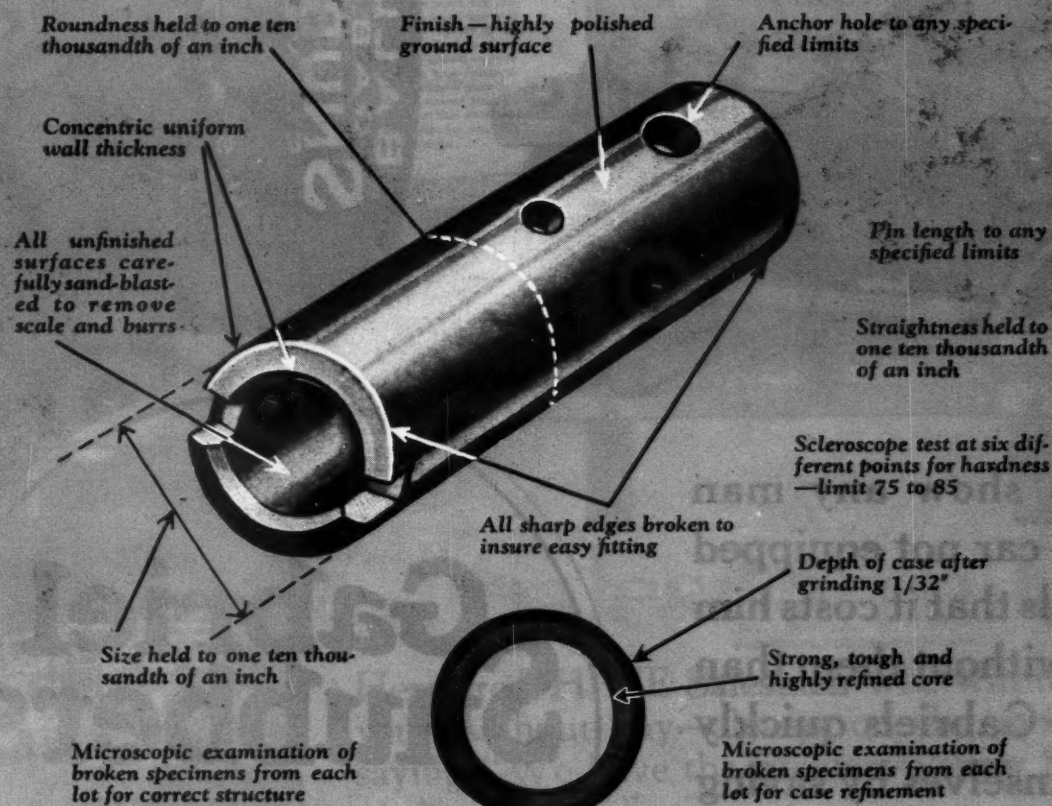
ARROW

Pistons • Piston Pins

Manner Improve Your Motors?

How to Inspect an Arrow Head Piston Pin

The standard inspection practice on pins at the Arrow Head factory covers the following points, among others:



A pin is rejected if it falls below any of the above standards

ARROW HEAD STEEL PRODUCTS
COMPANY

MINNEAPOLIS, MINNESOTA

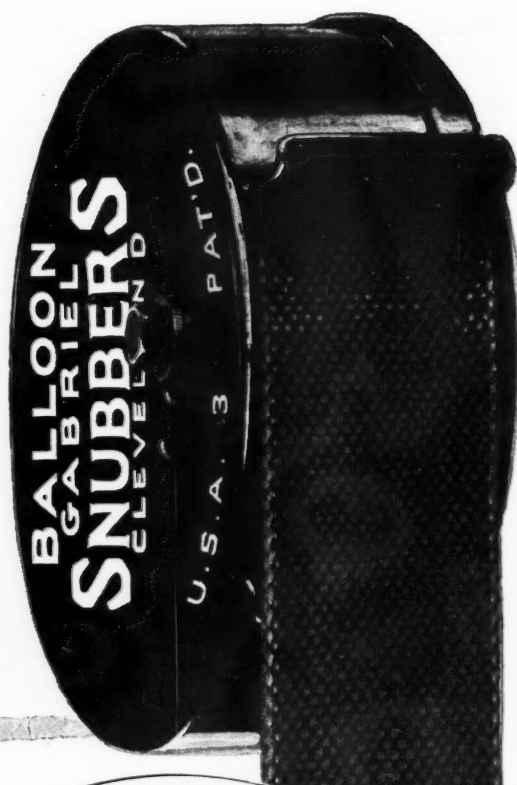
Head

Axle and Drive Shafts



Greater Riding Comfort

Gabriel Snubbers provide the gradually increasing brake action or resistance necessary to prevent the occupants of car from being bounced or thrown from the seat. They permit a greater speed over rough roads, rail crossings, cross-walks, etc., with safety and comfort.



It's easy to show any man who buys a car not equipped with Gabriels that it costs him more to be without them than with them. Gabriels quickly pay for themselves by saving wear, tear and spring breakage.

Car dealers everywhere are finding this to be true—their sales and profits prove it.

There's still an opportunity for you—take it.

*The Gabriel Sales Proposition is liberal—
send for it today.*

The Gabriel Snubber Manufacturing Co.
1415 East 40th Street, Cleveland, Ohio
Toronto, Canada

Gabriel Snubbers

**Ask for improved Gabriels with
4½ coils, the only Snubbers**

STEWART-WARNER

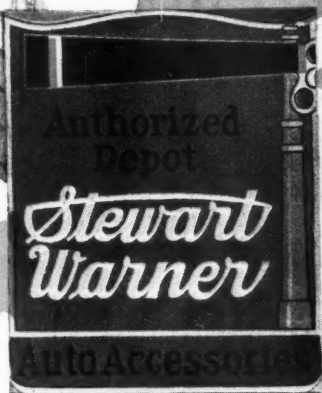
An Important
Campaign for Better
Accessories

Framed Certificate
for Wall or Window—

Stewart-Warner Blue Ribbon Dealerships are becoming more valuable every day. To let the public know that you are a Stewart-Warner dealer is to reap the sales advantages of this name known to every car owner in your community. The Stewart-Warner Service Station nearest you will tell you about this certificate and metal sign or you may write direct to us.

The New
Display Stand

A steel board in colors, holding all the Stewart-Warner Accessory Family—28 1/4 in. wide x 38 1/4 in. high—with easel stand, with pockets for advertising folders.



Display this attractive Metal Sign on the front of your store. Lithographed in Six Colors. Size 20 in. by 22 in. with flange for securely attaching to building. It is a familiar sign everywhere and a name known to over twelve million car owners who use Stewart-Warner Products and millions of others who have seen Stewart-Warner advertising.

Stewart-Warner
Products

Shock Absorbers
Bumpers
Rear Fender Guards
Spotlights - Electric Horns
Electric Windshield Cleaners
Rear Vision Mirrors
Speedometers - Heaters
Vacuum Tanks

— ALSO —

Stewart-Warner Matched-
Unit Radio

A Sales Force for You—

Here are THREE Salesmen who will team-work for you—without pay—always on the job—continually saying, "We have the Stewart-Warner Safety Group of Accessories."

One stands outside hailing the passing motorist. The other tells of the importance of your Stewart-Warner connection. The other presents the products in person.

Put these pluggers at work Now.

Send the coupon for particulars.

STEWART-WARNER SPEEDOMETER CORPORATION
1826 DIVERSEY PARKWAY - CHICAGO, U. S. A.

Stewart-Warner Speedometer Cor'n
Advertising Department
1826 Diversey Parkway, Chicago, U. S. A.

I am interested in procuring the Display Helps, illustrated in Motor Age, April 29, as checked:—

☐ Display Stand ☐ Dealer Sign ☐ Framed Certificate

Name _____

Address _____

City _____

State _____

TWELVE MILLION PEOPLE ARE TODAY
USING STEWART-WARNER PRODUCTS

A "one car" dealer can't possibly win!



All car buyers are divided into four definite price groups. We've told you that before, but it's worth repeating. A "one-car" line limits your sales and profits to but one of these four groups. You can sell only one out of every four of those you can and ought to be selling. Why stay in a game in which the chances to win are four to one against you? Four great price groups only, and the Willys-Overland line covers them all!

Write Toledo for confidential franchise details.

Now-in the great WILLYS-



“WE LOSE a little on each sale, but we make it up on the volume!” That seems to be the distorted philosophy under which many “one-car” Dealers operate.

What chance has a “one-car” Dealer in the long run against the merchant whose line offers full market coverage?

The overhead of each is approximately the same and yet, the “one-car” Dealer is confined to a narrow selling field, whereas his more fortunate competitor is in position to satisfy the tastes and needs of every customer.

The difference between a “one-car” line and a complete market coverage line like that of Willys-Overland is just the difference between mediocrity and success.

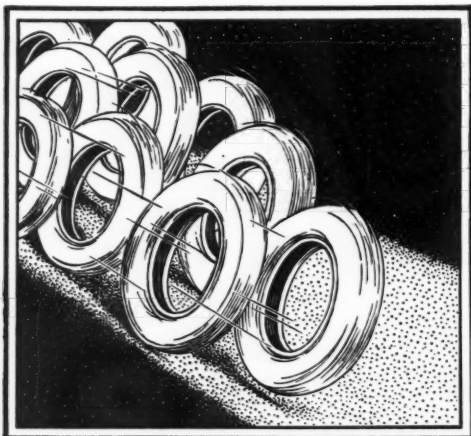
And events of the past few months in this fast moving industry (Study latest available registration figures and you will know what we mean) prove conclusively that the day of the “one-car” Dealer is numbered!

Willys-Overland, Inc., Toledo, Ohio

- Willys-Overland Sales Co. Ltd., Toronto, Canada

OVERLAND LINE *a car for every purse*

They keep sales rolling by LONG DISTANCE TELEPHONE



IN ATLANTA, GEORGIA, a wide-awake automobile tire concern worked out a follow-up telephone sales campaign. Telephone sales are assigned definitely to one employee and are his entire work. Fifteen days after the visit of each salesman this man gets the dealer on the telephone and solicits additional business. The telephone sales cost of this new business runs extremely low—often as low as one-half of one per cent on the total volume of new business secured!

BONDS AND BRICKS, ice cream and locomotives, matches and coal, groceries and flowers, textiles and real estate—these and dozens of other commodities are being bought and sold by long distance telephone. Long distance calls reach customers and prospective buyers who otherwise could not be reached so cheaply or promptly, if at all. They save the strength and health, as well as the time, of executives and salesmen. A long distance call covers hundreds or thousands of miles and *gets the answer* in a small fraction of the time and trouble required by any other means of communication.

Are you and your concern using your

telephone arm with which to outreach distance for business? Are your executives in constant contact with their men and with important customers? Are you using the telephone on the principle of the heap-measure—to get new business at almost negligible expense—new business that otherwise would be lost?

The Commercial Department of your local Bell company will gladly study your business and lay out a program of Long Distance selling, buying or collections. In the meantime you can talk 400 or 4000 miles just like speaking across the street.

What far-distant call would you like to make, now? *Number, please?*

BELL LONG DISTANCE SERVICE



ON HILLS



Ford owners want the satisfaction that other car owners have with their Bosch ignition. You can make a substantial profit supplying that want through the sale of Bosch Type 600 Ignition for Fords. Well advertised, favorably known, this Bosch product will help you over the hills in your business by giving you more profits. An extra money maker that is easily installed--easily sold. Order today.

Price \$12.75

AMERICAN BOSCH MAGNETO CORP.

Main Office and Works: Springfield, Massachusetts

BRANCHES: New York Chicago Detroit San Francisco



TYPE 600
BOSCH
Ignition
for
FORDS





The Bosch Tandem Attachment gives full vision to both front seat occupants—\$1.75 extra

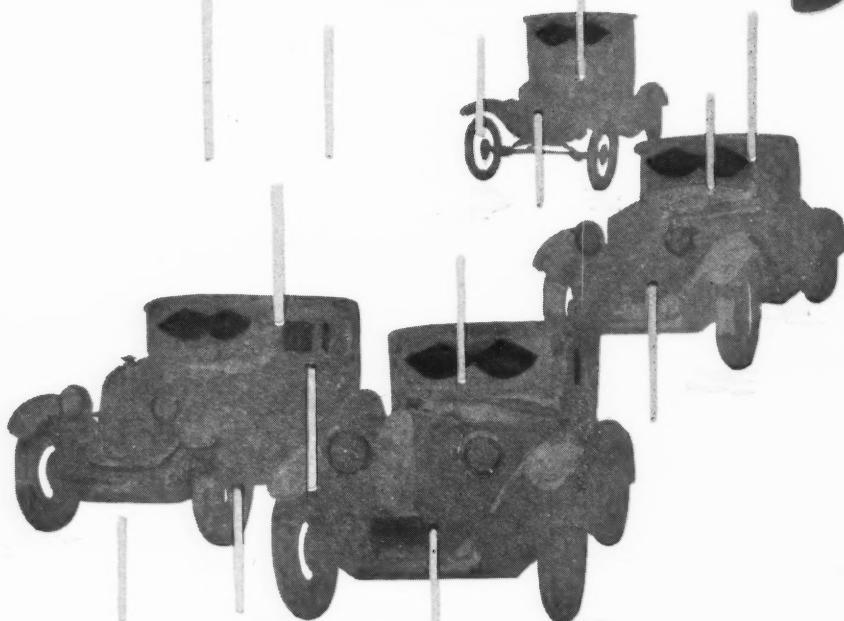


TRADE MARK

**YOU NEED THESE
BOSCH ELECTRIC
WINDSHIELD WIPER
ADVANTAGES**

- 1—Electrically Operated. Leaves both hands free.
- 2—Unusual Power, ample for cleaning heavy snow.
- 3—Steady, Positive, Unvarying Speed.
- 4—Quiet, practically noiseless.
- 5—Compact, Unobstructed Vision.
- 6—Non-smearing, Spring pressure insures clean wipe.
- 7—Adjustable, up and down—in and out—adjusts to any windshield.
- 8—Rugged, Long in life, Free from trouble.
- 9—Tandem Attachment. Full vision—all can see ALL.
- 10—Bosch Made, Embodies Bosch Precision, backed by Bosch Service everywhere.
- 11—Economical, Negligible current consumption.
- 12—Independent Unit, Does not effect carburetion—Uneffected by engine speed.

drizzly



Back and forth, back and forth-- the rhythmic action of the Bosch Electric Windshield Wiper totally eliminates the nervous tension and irritation associated with ordinary wipers. It is non-racing, non-stalling-- operating smoothly, steadily, powerfully, giving clear vision, regardless of engine speed. The Bosch Windshield Wiper runs from your battery, using less current than a headlight bulb. Profitable to sell, a strongly advertised accessory selling in every territory. The popularity of Bosch Electric Windshield Wipers is sweeping the country. Write the nearest Bosch Branch for details of the Bosch Merchandising Plan.

Price \$9.50 Complete. Tandem Attachment \$1.75 extra.

AMERICAN BOSCH MAGNETO CORPORATION
Main Office and Works: Springfield, Mass.
BRANCHES: New York Chicago Detroit San Francisco

BOSCH ELECTRIC Windshield Wiper

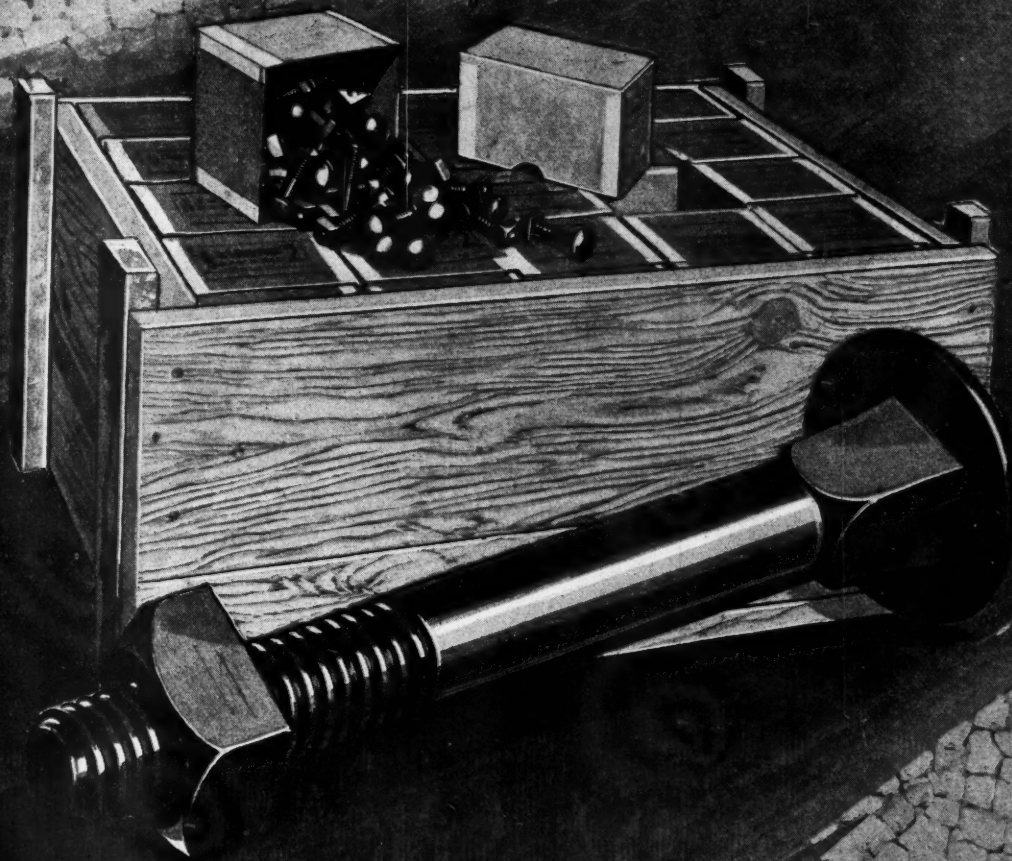
EMPIRE *New Process* BOLTS



EMPIRE Bolts and Nuts are packed and shipped with the same meticulous care that attends their manufacture.

Strong cardboard cartons, plainly labeled. Stout wooden cases, travel-proof. A place for every unit, and every unit in its place.

Speed and Accuracy—all the way through.



RUSSELL BURDSALL & WARD
BOLT & NUT COMPANY
 PORT CHESTER, N.Y.

Branches: **CHICAGO** **DETROIT** **ROCKFALL, Ill.** **SEATTLE** **SAN FRANCISCO**

Makers of Bolts, Nuts and Rivets Since 1845



Thompson

Silcrome Valves

Do You Want a Permanent Business?

Of course you do—but statistics show that many, many service stations and garages fail to achieve permanence. There are many little reasons for this, but there is one *big* reason: the garage man doesn't *take in* enough money to show a profit on rent, light, heat, taxes, insurance, bad debts, interest, other overhead, unsalable materials and other depreciation, and labor, including his own time.

To pay this multitude of bills, you have just two things—**TIME** and **MERCHANDISE**. Isn't it common sense to spend less of that precious time in slow repairs at a small sum per hour and to spend more time in selling quality merchandise that represents more money, more customer satisfaction, more repeat business and more reputation?

The hub of your whole business can be a local reputation as an expert in maintaining engines at the very highest point of efficiency. The engine is your chief opportunity for real profit on both parts and labor—and don't ever forget that *valves* are the heart of the motor.

Thousands of repairmen have learned that it pays better to *sell more and regrind less*—to put in quality parts like Thompson Valves and give the customer the kind of engine he ought to have. Letters from all over the country prove that these repairmen are making more money with fewer "come-backs."

You, too, can do it. Ask your jobber for Thompson Valves and tell your next customer what they will do for his engine.

THOMPSON PRODUCTS, INC.

General Offices: Cleveland, Ohio, U. S. A.

Factories: CLEVELAND and DETROIT

Tell a man *why*, and he'll gladly buy new Thompson Valves instead of having an old, worn-out set reground. Write for "Ten Tips" which shows you how to sell new valves.





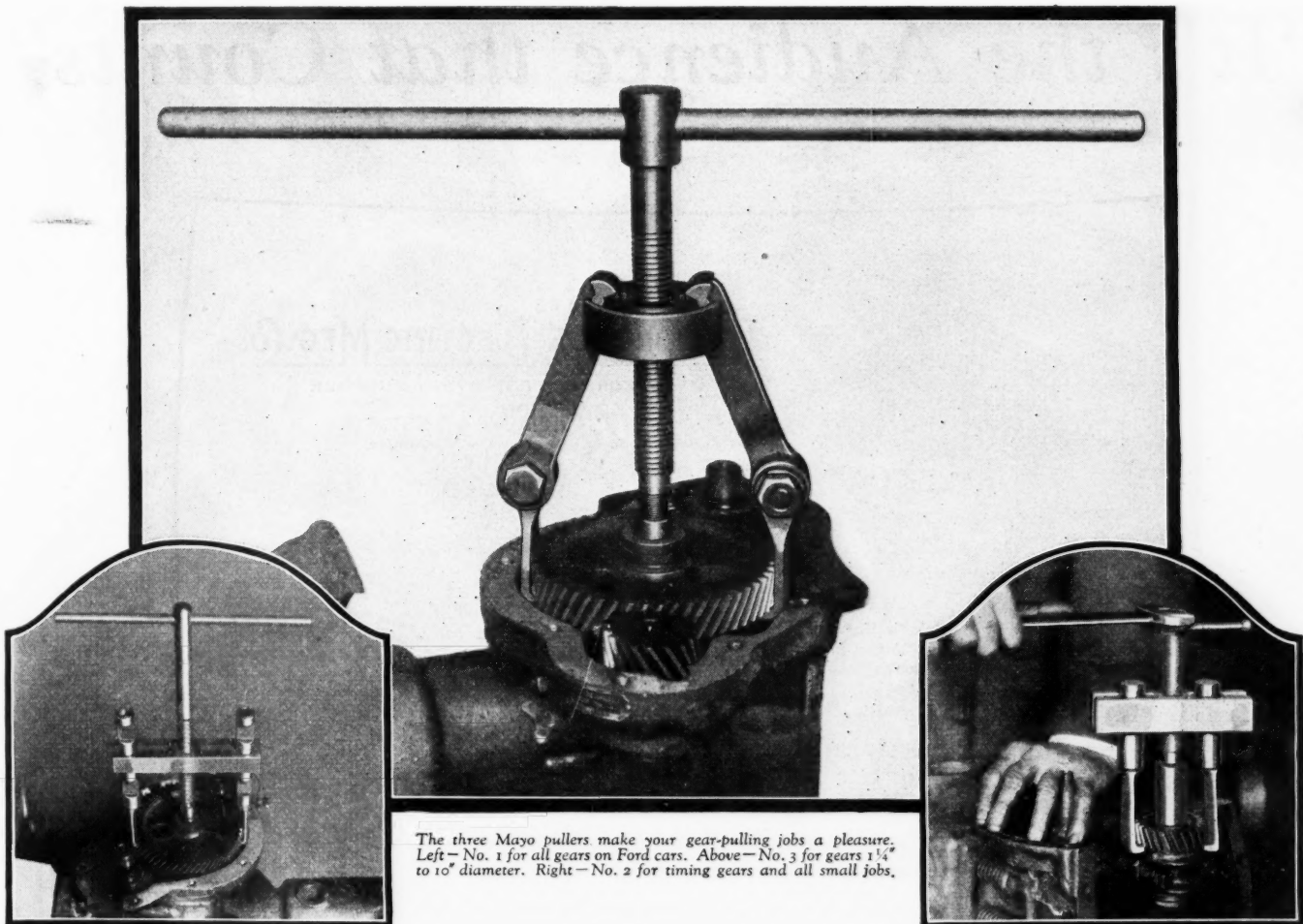
BY selecting Hayes Wheels as standard equipment Willys-Overland has given concrete expression of its policy to give the public the greatest value for the least expenditure. For Hayes Wheels with attached lug rims represent the most modern wheel developments,

measuring up to other motor car advancements by offering these very desirable and exclusive advantages: Elimination of rim squeaks, elimination of torn valve stems, distribution of driving strain, saving of time in tire changes, saving of tire wear, saving of service expense.

HAYES WHEEL COMPANY, *Manufacturers*, Jackson, Michigan, U. S. A.

HAYES WHEELS

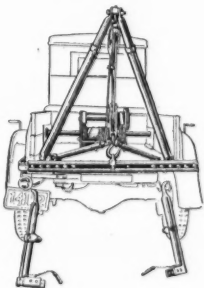
WITH ATTACHED LUG RIMS ~ STANDARDIZED IN WOOD, WIRE AND DISC



MAYO 3-Ton Wrecking Crane

W. H. KINCAID, President, Motor Transport Co., Huntington, W. Va. writes:

"I recently made a trip to Bainbridge, Ohio to tow in a wrecked Hupmobile touring car. I used one of your wrecking cranes for the first time and I want to tell you it was the most satisfactory trip I ever made. Your crane and towing cross-bar stood the 120-mile trip without an adjustment and handled the car to perfection."



Here's what you need for towing profits. The Mayo 3-Ton Wrecking Crane. Handles any wreck, is demountable, and makes your service car do double duty. Complete with carrier, \$125.

Speed up gear-pulling with MAYO tools

THE next time you tackle a gear-pulling job, you'll wish you had a Mayo Gear Puller. With the three Mayo tools shown here, you can turn out all the gear work on any car that comes into your shop and make money on it too.

Some mechanics call Mayo Gear Pullers "tough tools for tough work." Others say they are "Tools of a hundred uses," but whatever you name 'em, they certainly do the work. Ask your jobber to show you the Mayo line.

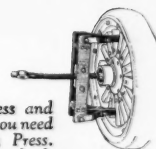
Prices: No. 1, \$9.75; No. 2, \$7.50; No. 3, \$19.75

MAYO

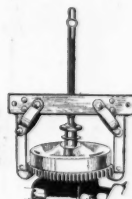
GARAGE EQUIPMENT

Nationally distributed by David Lupton's Sons Co.
2631 Woodward Ave., Detroit. Buy from your jobber

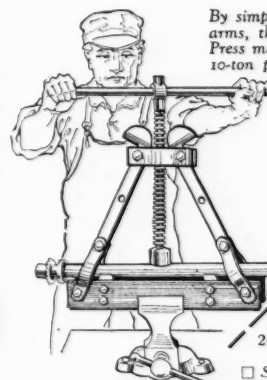
For heavy press and pulling work, you need Mayo No. 4 Press. It'll pull frozen wheels—key and all.



You can pull clutches and flywheels in a jiffy with Mayo No. 4 Press. It's the most usable tool in the shop.



By simply reversing the arms, the Mayo No. 4 Press may be used as a 10-ton press. Ideal for straightening shafts, pressing hubs, etc. Price, only \$30.00.



MA 4-29

DAVID LUPTON'S SONS CO.

Distributors

2631 Woodward Ave., Detroit, Mich.

☐ Send full description of the following Mayo tools:

....3-Ton Wrecking Crane

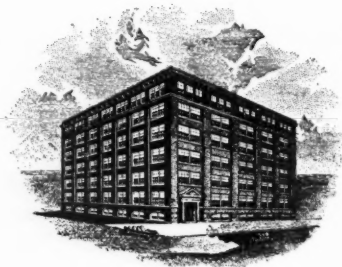
....Press-Puller No. 4

....Gear Pullers No. 1, 2, 3

☐ Send name of nearest jobber stocking Mayo Garage Equipment.

Name _____
Address _____

"It's the Audience that Counts"



THORDARSON ELECTRIC MFG. CO.

TRANSFORMERS FOR EVERY PURPOSE

TRADE THORDARSON MARK

800 W. HURON ST. COR. KINGSBURY

CHICAGO

March 23, 1926.

Mr. W. W. Sheppard,
c/o Motor World Wholesale,
5 South Wabash Avenue,
Chicago,
Illinois.

Dear Mr. Sheppard:

You have undoubtedly noticed that our advertising in Motor World Wholesale is to reappear after a period of about ten months absence. I think the reason for our coming back will interest you.

On January 1st, we made a very careful check of the dollars and cents' results from our advertising in seventeen automotive trade papers during 1925. We considered the sales which could be traced directly to each magazine. These sales included those to jobbers and to dealers, also the proportion of sales which were proven to result from our direct inquiries. This gave us a sales unit by which we could divide the cost of advertising in each of the periodicals. The cost per unit in some papers ran as high as ten dollars (\$10). The average cost in all papers was a little more than ninety cents (90¢) per unit. The lowest cost of any paper reaching the general automotive trade was sixty-eight and seven-tenths cents (68.7¢), this being the cost in Motor World Wholesale.

This was somewhat of a surprise because the inquiries from Motor World Wholesale were comparatively few but it proved that they were of such quality that each one was worth many apparently small inquiries from other sources.

Yours very truly,
THORDARSON ELECTRIC MFG. CO.

W. W. Manly
Ignition Dept.

HPM:LC

The effectiveness and economy of Motor World Wholesale is not a matter of opinion or speculation. Its worth is being proved every day, week and month. Coverage of the wholesale field—and depended upon by the wholesale field.

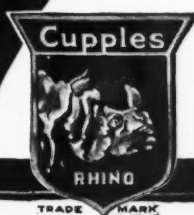


"Tough as a Rhino"

"CUPPLES" and "EXTON"
Tires and Tubes are made
in all popular Balloon
and High Pressure Sizes.

CUPPLES National Advertising in The Saturday Evening Post, The Country Gentleman and other publications has scored a popular hit. That's profitable—and it's one advantage the Cupples line gives the aggressive dealer. ~ But prompt service—dependable quality—a complete line—and a margin of profit that gives you solid rock to build on—these are the things that you will find are winning dealer popularity for Cupples Cords. ~ With the public attitude toward price in mind, the complete Cupples line is supported by the Exton competitive line, enlarged and improved to a point that equips the Cupples Dealer today for every sales opportunity—of whatever class or size. ~ "Tough as a Rhino" is becoming a national slogan. Dealer profit and growth has always been a Cupples policy. Write or wire us today for details and territory.

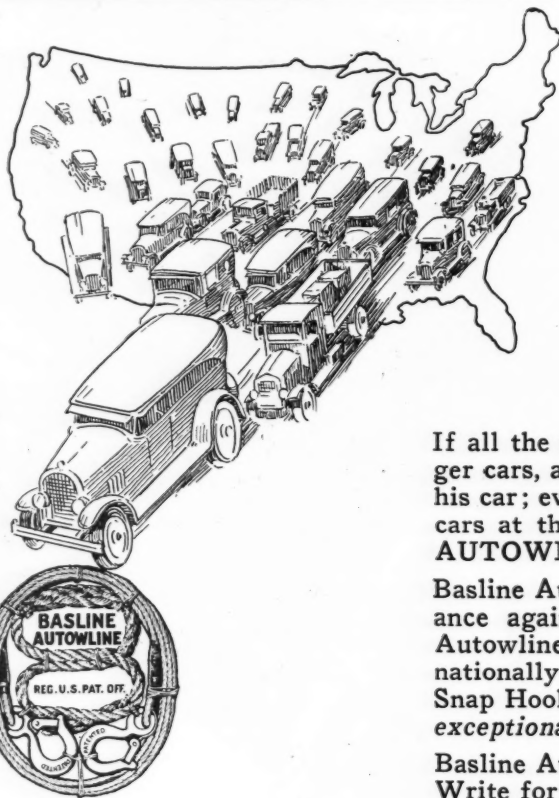
CUPPLES COMPANY · SAINT LOUIS
A National Institution Since 1851



Cupples

TIRES TUBES





Here's Your Market for BASLINE AUTOWLINE

If all the motor cars in the United States were seven-passenger cars, and each driver would crowd an extra passenger into his car; every man, woman, and child would be riding in motor cars at the same time. There's your market for BASLINE AUTOWLINE—some market, eh?

Basline Autowline is a motoring necessity—it's absolute insurance against delay—it's a real emergency tool. Basline Autowline is—the original wire rope towline—the only nationally advertised towline—the only towline with patented Snap Hooks that cannot loosen. Above all, it is the towline of exceptional strength.

Basline Autowline pays Jobbers and Dealers a good profit, too. Write for Price List and descriptive literature.

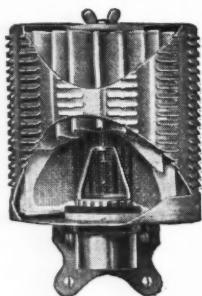
BRODERICK & BASCOM ROPE CO., St. Louis
Eastern Office and Warehouse: 76 Warren St., New York City

J 541

PROTECTOMOTOR

REG. U.S. PAT. OFF.
Perfect Positive Protection

Filters ALL dust, sand and grit out of air supply to motor and carburetor. No moving parts to wear out and get noisy.



Protectometer is as far ahead of "air cleaners" as vacuum cleaners are ahead of the old fashioned broom.

You might as well sell the best. By actual tests it has been shown that 100 times more dirt will get into a motor through any other device than through the Protectomotor which gives 99 9/10 protection against dust, dirt and grit.

Special discounts to dealers who desire to increase their number of satisfied customers—dealers who desire to make every sale an asset rather than liability—dealers who want to make customers boosters instead of knockers.

Staynew Filter Corporation
ROCHESTER, N. Y.

A motor without a Protectomotor is like a watch without a case.

New!



Easy Way of Ordering Tools!

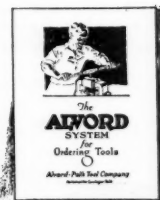
The Alford System of ordering tools is the greatest aid to simplification ever.

It lists reamers by car and job so that you can turn directly to what you want, paying no attention to fractional sizes.

This Booklet is also our new catalog covering a full line of small tools made especially for repairmen—carrying a brand-name that has been known by mechanics for 20 years.

Write for this little book just off the press.

ALVORD-POLK TOOL CO.
Millersburg, Pa.



ALVORD - POLK

Tools for Repair Shops



There's a whale of a profit under the cylinder head!

EVERY time a shop man removes the head of a motor, there's a wonderful chance to cash in on the fastest growing, most profitable end of the automotive industry—replacement parts and motor overhauling.

When you consider the enormous number of cars in every territory that need cylinder over-sizing, and the good profits this work brings, you'll understand why you should be equipped to handle it.

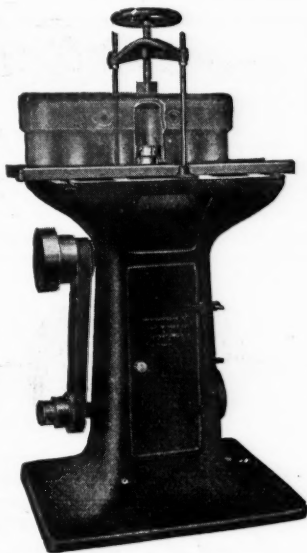
Here's a typical example of the profit garages are making with Stormizing Machines on over-size jobs for a 3 1/4" six cylinder motor.

| | | |
|-------------------------------|---------|--------------|
| Selling Price of job..... | \$50.00 | |
| Cost of 6 pistons..... | \$7.86 | |
| Cost of 6 pins..... | 1.53 | |
| Cost of 18 rings..... | 3.78 | |
| 1 hour Stormizing labor.... | .70 | Total labor |
| 3 hours for fitting pistons.. | 2.10 | and material |
| Overhead—50% of labor cost | 1.40 | cost |
| | | |
| | \$32.63 | Your profit |

The Storm Machine is as accurate as factory equipment. It's easy to operate—any mechanic can run it. The responsibility for accuracy rests entirely on the machine, not on human skill. The low cost of Storm equipment puts the profits from cylinder over-sizing within easy reach of every shop. Let us tell you about Stormizing.

Stormizing Machines are built in three sizes: portable, semi-portable and stationary types. Each model works on exactly the same principle, and each does perfect, precision work. The only difference lies in cylinder capacity.

We have an authoritative book called "Facts" that shows how to recondition cylinders and do satisfactory work, that builds business. To those interested in motor reconditioning this book is free. Just write us for it.



Model "R"

STORM MFG CO. INC.
406A SIXTH AVE., S., MINNEAPOLIS, MINN.

TWO FULL PAGES

One right after the other
SATURDAY EVENING POST, MAY 15th
LIBERTY—MAY 22



MAIL THE COUPON. It will bring you—Free—a supply of colorful window display material and tell you how to get the attractive Shaler Display Cabinet for your counter—just what you need to make a dotted line from Shaler's big national advertising to your store.

This advertising is teaching motorists the wonderful usefulness of the Shaler Vulcanizer. They are ready to buy. The display material in your window brings 'em in to buy. The Shaler Selling Cabinet, with its demonstration of the outfit, its operation, and a sample vulcanized repair, closes the sale. Besides the initial profit you are sure of steady, extra repeat profits on the automatic sale of Shaler Patch-&-Heat Units, year after year.

C. A. SHALER CO., Waupun, Wis., U. S. A.
Canadian Factory, Montreal

Mail
the
Coupon



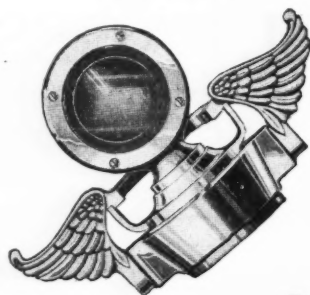
C. A. Shaler Co., 208 Fourth St., Waupun, Wis.

Name.....

Address.....

City.....State.....

Jobber's Name.....



The Cap that's making records

Car owners as well as car dealers have been quick to see the advantages of this lasting cap of bronze. Sales reflect its popularity and the demand is growing every day. Write for information.

Prices
Junior Cap \$4.50
Regular size \$6.00

ELLISON BRONZE CO., INC.

The ELLISON
U. S. STANDARD BRONZE
RADIATOR CAP

Jamestown, N. Y.



SPEED-DEE CLEANS UP for Dealers

Results in quick stock turn-over, with small investment and liberal profits. Without water it removes grease, stains, etc., from hands, clothes, upholstery, paint or enamel. Indispensable in shops, service stations and car kits. List \$50.

Write for discount details.

States Chemical Company
703 W. Fulton St. Chicago, Ill.

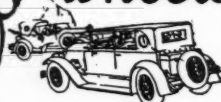


Here's the Way to Sell Tire Chains

Let the package they come in display them. By making them easy to buy, you automatically make them easy to sell. Dealers like the WESCO carton. Write.

Western Chain Company
Chicago, U. S. A.

Good bye, buggy wheels



Budd Wheel Company

Detroit—Philadelphia

Transmissions
and Clutches



Trucks, Busses
Passenger Cars

QUICK SERVICE ON COMPLETE UNITS OR PARTS

BROWN-LIFE GEAR CO.

SYRACUSE, N. Y.



More
Power
Less
Fuel

Zenith - Detroit Corporation, Detroit, Mich.

Simplicity

REBORER AND GRINDER

A big money-maker in any automobile repair shop or garage. Ask for free demonstration in your own shop.

Simplicity Manufacturing Company
Port Washington, Wisconsin



Curtis Pneumatic
Machinery Co.

1527 Kienlen Ave.
St. Louis, Mo.

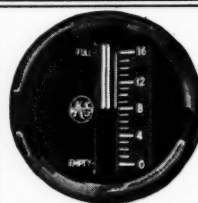
The Original
Bosch

Franchise details for selling ORIGINAL BOSCH Automotive Equipment will be sent to any Distributor, Dealer or Service Station on request.

ROBERT BOSCH MAGNETO CO., Inc.
109 West 64th Street New York, N. Y.



ORIGINAL BOSCH units bear the full name, Robert Bosch, and the trade mark shown at left. These are the identifications of Bosch quality—famous since 1887.



The K-S GASOLINE Telegage

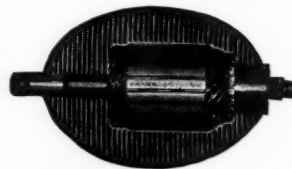
A gasoline gauge on the Dash. Note full page in colors in May 6th Motor Age, also half page Saturday Evening Post, May 15th. Write for description and proposition to the trade.

KING-SEELEY CORPORATION
298 Second Street Ann Arbor, Mich.
Chicago Branch: 2450 Michigan Blvd.



PROTEX TIRE CHAINS Absolutely Stop Skid

Protex Chain Co., Inc.
Waynesboro, Pa. Many small horseshoes grip the road and prevent slip. The first scientific anti-skid device.



FREDERICKS Rewinding Service

New Rewind Profits—See announcement every 4th week. Write now for price list. The H. M. Fredericks Co., Lock Haven, Pa.

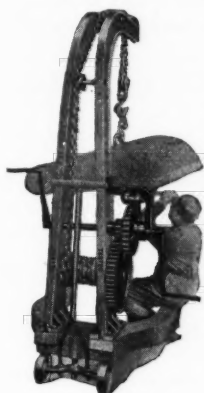
Hycor
Brake Lining
FOLDED AND STITCHED
HYDRAULIC COMPRESSED

Millions of feet
annually installed
as factory equipment

THE MANHATTAN
RUBBER MFG. CO.
PASSAIC, N. J.

CANTON

Portable Crane and Hoist
Is Now Equipped with Safety Friction
Load Brake

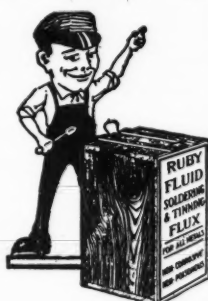


The purpose of the Canton Portable Crane and Hoist, equipped as it now is with the new Safety Friction Load Brake, is to make even more money for service and repair shop men, than ever before. The Service Friction Load Brake holds the load at any point, and makes it impossible for the load to get away from the operator. On all new models and for all models already in use.

Write for a copy of the illustrated booklet M. A., and additional literature describing the outfit. It will show you the way to better profits.

The Canton Foundry & Machine Co.
Canton, Ohio
New York Office—303 East 15th Street

There Simply Isn't Any Better Flux Made Than Rubyfluid!



A complete substitute for dangerous acids, Zinc Chloride, Salammioniac and other mixtures commonly used as a flux. Ruby Fluid is quick acting, anti-rusting and is always ready for instant use. Ruby users include the foremost industries of the country. Send for generous Free Sample

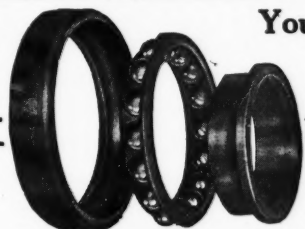
Rubyfluid

COMBINATION
SOLDERING AND TINNING FLUX

THE RUBY CHEMICAL CO.

68-70 McDowell Street

Columbus, Ohio



Your Present Bearing Sizes Duplicated

Or we will work from your blueprints and supply to your requirements of Angular Contact Thrust Bearings, Angular Contact Radial Bearings and Thrust Ball Bearings of all types.

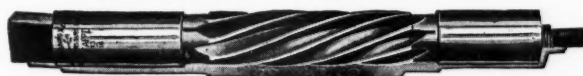
Quotations are made promptly on all inquiries.

THE BEARINGS COMPANY OF AMERICA

LANCASTER, PA. Western Sales Office, 1012 Ford Bldg., Detroit, Mich.

Protect the Oil-Grooves

By finishing bushings with FULL spiral fluted SMOOTH-KUT Reamers. The full spiral causes a continuous shearing action that cuts clean and can't hurt the oil-grooves.



Patented April 7, 1925.

SMOOTH-KUT are the only full-spiral expansion reamers made. They are guaranteed, and reground by us at cost. Studebaker, Velle, Franklin, Lycoming, Muskegon and others use SMOOTH-KUT in production. As a finishing tool for the Piston pin hole.

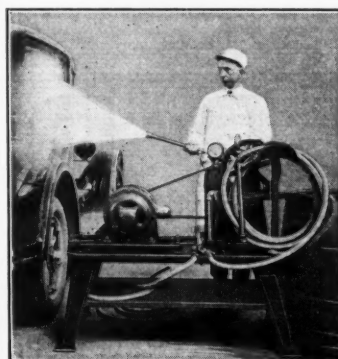
Your jobber can supply them singly or in sets. ASK FOR THEM BY NAME, as imitations are inferior products.

Millersburg Reamer & Tool Co., Millersburg, Pa.

SMOOTH-KUT EXPANSION REAMERS

(Trade Name Registered)

ELECTRIC "SPEED-SPRA" Original MECHANICAL WASHER



"Speed-Spra" Service Pays!!

Your wash rack is one of the important service departments in your shop. Give good service there and every part of your business will benefit.

An Electric "Speed-Spra" Auto Washer will enable you to handle more cars, do it quicker, cheaper and above all—give your customers the kind of work and service they want.

Write today for a complete description of this best of mechanical washers. Find out why it cleans cars at less cost and in less time than any other. Illustrated folder mailed free upon request.

ELECTRIC "SPEED-SPRA"

A complete unit, ready for installation in your shop. 300 pounds guaranteed pressure. Completely atomizes water or solution; spray can't harm the finish. "Speed-Spra" saves on power and water and cuts time and labor costs in half.

Hayes Pump & Planter Company

819 Sixth St.

Dept. 19

Galva, Illinois

"KEEP THE WASH RACK BUSY !!"



One of the Big Small Things That Built Up Sales

Every well-balanced stock has in it several small items, selling at a low list and in popular demand, which fill in the gaps with profits between big sales. That's business.

YAVAPAI Onyx Gear Shift Balls are one of the best of these. They sell easily, quickly, without service afterward, and they net a good percentage of profit.

The original investment is small, too, and they take up very little room.

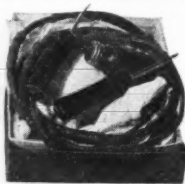
Ask your jobber for YAVAPAI Onyx Gear Shift Balls, or write us direct, giving his name.

Yavapai Onyx Mining Corp.

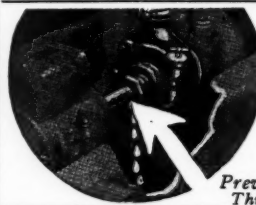
Automotive Division

Dubuque, Iowa

U. S. A.



The New
Universal TROUBLE-SHOOTER
For locating grounds, opens and shorts.
For circuit testing. The only TROUBLE-SHOOTER for Radio testing. Operates on A.C. or D.C. Fits any standard receptacle. You get your money back if you are not satisfied. Order yours today.
Price Only \$3 plus postage
Universal Test Equipment Co.
2939-41 N. Oakley Ave. Chicago



Stops Pump Shaft Leaks
Immediately and Permanently

Conneaut Plastic Metallic Packing molds in the fingers to fit stuffing-boxes of any shape or size. It is a repair for the worn shaft and loose bushing. At your Jobbers in 1-pound and 5-pound cans; if not, write us.

Prevent
This

CONNEAUT PACKING COMPANY
Conneaut, Ohio

B U R D

TURNED — QUICK SEATING — OIL PISTON RINGS

BURD HIGH COMPRESSION RING CO., ROCKFORD, ILL.

L & S VIBRATION ELIMINATOR

(PAT. PENDING)

makes OVERLAND FOURS quiet
Vibrationless

MAKE US PROVE IT—WRITE

LA MERE & SARDESON, INC., Mfrs.
1900 CENTRAL AVE. — MINNEAPOLIS, MINN.



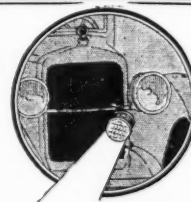
QUALITY—PROFIT—TURNOVER

American
Hammered
Piston Rings

American Hammered Piston Ring Company
Baltimore, Maryland

THE WALDEN FORE-LITE

Mounted ahead of the radiator and operated like a spotlight from the instrument board, the WALDEN Fore-Lite satisfies a need hitherto filled by make-shifts. Universal fittings. Selling fast wherever introduced. Ask your jobber, or write us direct, giving his name.



THE WALDEN CO.

2017 S. Michigan Ave.

Chicago

"As Silent as a Shadow"
Quincy Compressors
Quincy, Illinois

J-538



UNITED STATES
Portable Electric
DRILLS

Built by the oldest maker of Portable Electric Drills in the World.

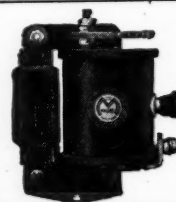
Ask for Catalog 105 **THE UNITED STATES ELECTRICAL TOOL CO.**
Cincinnati, Ohio, U. S. A.



SPECIALTY SALESMEN

Sell the Dieringer Bushing Remover. Mechanics buy these tools on sight. Six sizes \$4.50. Liberal discount to hustlers.

E. T. DIERINGER
Box 282 Bolivar, Ohio



Mallory
Ignition Coil

Has two primary windings instead of one. Gives a hotter spark, makes easier starting, gives more power, quicker pickup and more mileage. Try it on a sluggish motor. Write for full particulars.

The Mallory Electric Corporation, Toledo, Ohio.



The SO-LO JACK

\$6.00 Retail

West of Mississippi \$6.50

4 1/2" LOW—HIGH 15 1/4"

The REAL Balloon Tire Jack

All Steel Construction

POWERFUL—STURDY—EASY TO OPERATE

A Sure Seller with your Trade

SO-LO JACK CO., Inc.

108 Massachusetts Ave., Boston, Mass.

BOLTS BLUE PRINT BUSHINGS

"Made to Blue Print"

"Bp" guarantees to the Replacement Trade the same high standard of Quality and Accuracy demanded by the car manufacturer.

The Fostoria Screw Co., Fostoria, Ohio

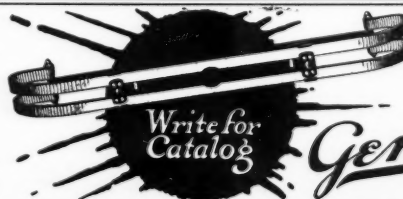


SAVES TIME!

Tests Compression
Locates all knocks,
leaky valves and rings
Locates Piston Slaps
Eliminates guesswork
SELLS MORE JOBS

If your Jobber cannot supply you, write us.
HAMMETT MFG. CO., Kansas City, Mo.

HAMMETT MOTOR TESTER



Completely Gemco made, the big selling line

GEMCO MFG. CO.
760 S. Pierce St.
Milwaukee, Wis.

Write for
Catalog

Gemco

BUMPERS



Thirty-seven
BRANCHES

AHLBERG BEARING COMPANY
321 EAST TWENTY NINTH STREET, CHICAGO ILLINOIS

Gilmer

Makers of
the world's
best known
fan belts.

L. H. GILMER COMPANY, Tacony, Philadelphia, Pa.



They Won't Come Back

Those jobs won't come back showing oil passing, compression loss and crank-case dilution if you use a Hall Hone. The Hall makes cylinders both round and parallel. Ask your jobber.

THE HALL MFG. COMPANY
504 Hall Bldg., 1600-06 Woodland Ave.
Toledo, Ohio

GATES VULCO

Fan Belts and Radiator Hose

Made By
The World's Largest Makers of Fan Belts



Install the Gill Combination of Piston Rings

and in each 6 cyl. job make \$3.20 instead of the usual \$1.80. This free booklet tells how.

The Gill Mfg. Co., 8300 So. Chicago Ave., Chicago

KISSEL

CUSTOM BUILT

Kissel Motor Car Co., Hartford, Wis.

Kawneer

SOLID COPPER

STORE FRONTS

Write for Special Book Garage Front

THE KAWNEER CO., 3424 Front St., Niles, Mich.

LINCOLN

FOR ALL CARS—\$15 to \$40

SHOCK ABSORBERS

LIKUM Alarm Ignition LOCK

TYPE A \$5.00 Locks ignition and sounds horn if tampered with TYPE B \$7.00

LOOMIS - KNIGHT - MILLER, Inc.
SPRINGFIELD - MASSACHUSETTS

Made in many sizes to meet any and all requirements in garage, tire repair shop and filling station. Six types: Two Stage, Single Stage, Air Cooled, Water

Cooled, Stationary, Portable. Our low prices enable you to get a Compressor for a small investment. Send for literature.

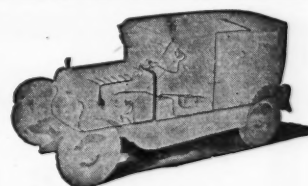
The United States Air Compressor Co.

5304 Harvard Ave.

Cleveland, Ohio

Packard
Cable

The Packard Electric Co.
Warren, Ohio



HERE is highest radio quality at lowest price. A chance to get permanent distribution for complete Delano line. The Delano Sheraton sells for \$75—has built-in Delano loud speaker—5 tubes—special Delano hook-up and mahogany cabinet that completely encloses entire set. Wire or mail coupon today.

Modernola Co., Inc.
Johnstown, Pa.

Gentlemen: Please send me full details.

Name _____

Address _____

DELANO RADIO

WEL-EVER

"OIL CONTROL" PISTON RINGS

The Motor Necessity That Has Made Good Backed by Eight Years' Satisfactory Service

THE WEL-EVER PISTON RING CO., TOLEDO, OHIO
Sold most everywhere. If your dealer cannot supply you write us.

Thermoid
Hydraulic Compressed
Brake Lining

FROM THICK
TO THIN
DOWN TO THE
LAST PLY
IT HOLDS

CLASSIFIED ADVERTISING

PARTS

HOUSE OF A MILLION AUTO PARTS

The largest stock of new and used car and truck parts in the world. We have everything. Always mention model and serial number in order. Write us. All inquiries answered promptly.

DOUGLAS AUTO PARTS CO., INC.
2003-5-7-9 South State St., Chicago, Ill.

AUTO PARTS

SAVES 50% TO 75% ON ALL CARS

New and Used Gears—Springs and Axles—Cylinders—Motors—Rear Systems, etc. Wire or Write

INDIANA AUTO PARTS CO.
608-10 N. CAPITOL AVE., INDIANAPOLIS, IND.
LARGEST CAR WRECKERS IN INDIANA

PATENTS & PATENT ATTORNEYS

Attorney-at-Law and Solicitor of Patents
C. L. PARKER

Formerly Member Examining Corps, United States Patent Office

American and foreign Patents secured. Searches made to determine patentability and validity. Patent suits conducted. Pamphlet of instruction sent upon request.

McGill Building, WASHINGTON, D. C.

BUSINESS OPPORTUNITIES

FOR SALE—The best located Garage and Accessory place in a booming South Georgia town. A money making place for a live, awake party. Box 6265, Care of Motor Age, 5 St. Wabash Ave., Chicago, Ill.

HELP WANTED

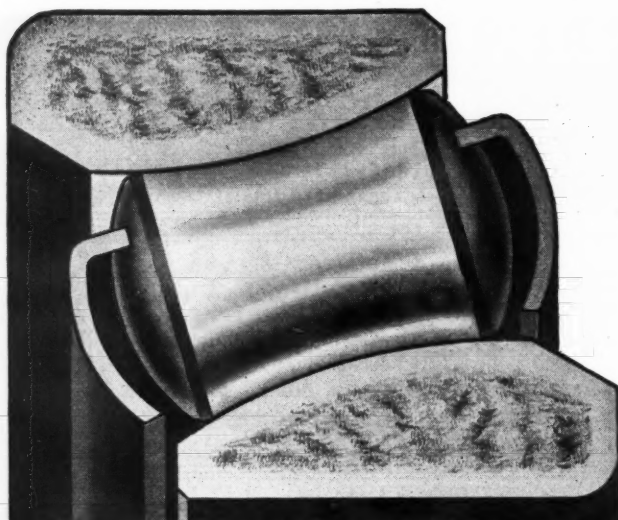
SALESMEN WANTED in several States to handle The Winther Spoke Tightener. Every shop needs one. C. W. Winther, Fresno, Calif.

PARTS

\$4,000.00 PEERLESS TRUCK PARTS

Almost all parts for 1915 and 1916 Models. Best offer takes. J. G. Lannin, 910 S. Michigan Ave., Chicago, Ill.

May 6, 1926
will be the date of the
SALES AND SERVICE
REFERENCE NUMBER
of
MOTOR AGE



SHAHER

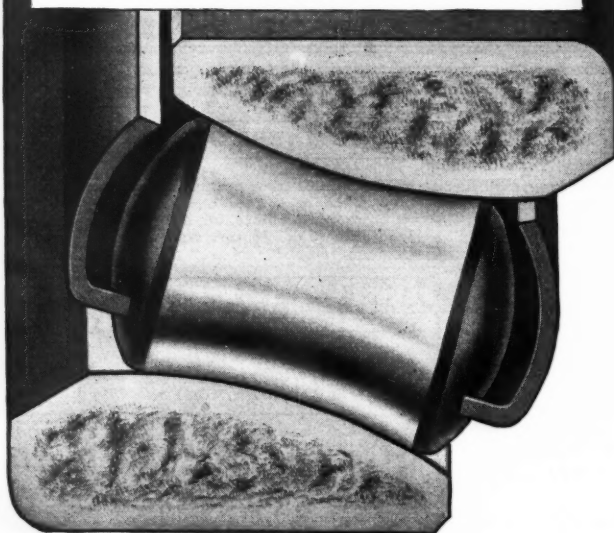
"Self-Aligning"
ROLLER BEARING
PATENTED

"Truly a Record"

"During the course of our long service business, I have never seen defective Shafer Bearings on any Good Maxwell or Chrysler Four car, *truly a record* that speaks for the reliability of performance and quality of your product."

—Service Manager, Colt-Stewart, Inc.
New York

SHAHER BEARING CORPORATION
6501 West Grand Avenue
CHICAGO, ILL



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WATERVLIE T

Spiral Expansion Aligning

REAMER

for Piston Pin Bushings
on all Cars and Trucks

YOU KNOW it's a Watervliet by the self-cutting front pilot that does the rough cutting.

YOU KNOW it's a Watervliet by the smooth, satisfying feel of the spiral flutes purring through the work.

YOU KNOW it's a Watervliet by the mirror-like full bearing surface on the finished job.

And by all these signs, you know it's a real he-man's service tool,—one you'll be proud to own and proud to work with.

They Will Not Chatter

Resharpener Service

Have your Watervliet properly resharpended at the factory for a service fee of only \$1.



Special Garage Set No. 10PE

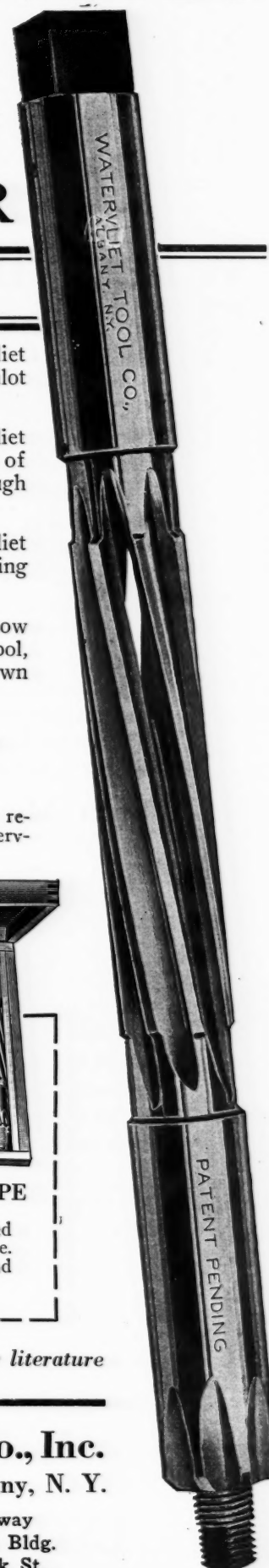
Ten of the most generally used sizes in a sturdy oak case. The ideal set for garage and service station.

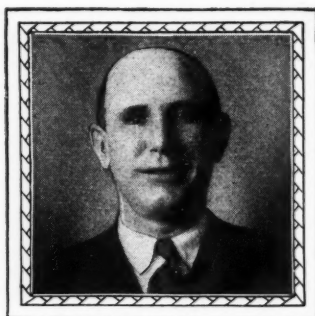
Ask your jobber or write for literature

Watervliet Tool Co., Inc.

1037 Broadway Albany, N. Y.

New York—1780 Broadway
Kansas City—711 Mutual Bldg.
San Francisco—661 Turk St.





Where Trail and Highway Meet

In Petoskey, Michigan, the Mackinaw Trail and Dixie Highway join. There, in this little northern city of five thousand, is the Northern Auto Company, Lyon-equipped, thriving under the genial management of Mr. Rigg.

Success requires good management. Good management demands adequate display of merchandise and convenient arrangement of stock.

From gasket board on the left to tire racks on the right, with counters in the foreground and steel shelving extending to the back of the room, about the only equipment you can see that is not Lyon is the cash register on which they ring up profitable sales.

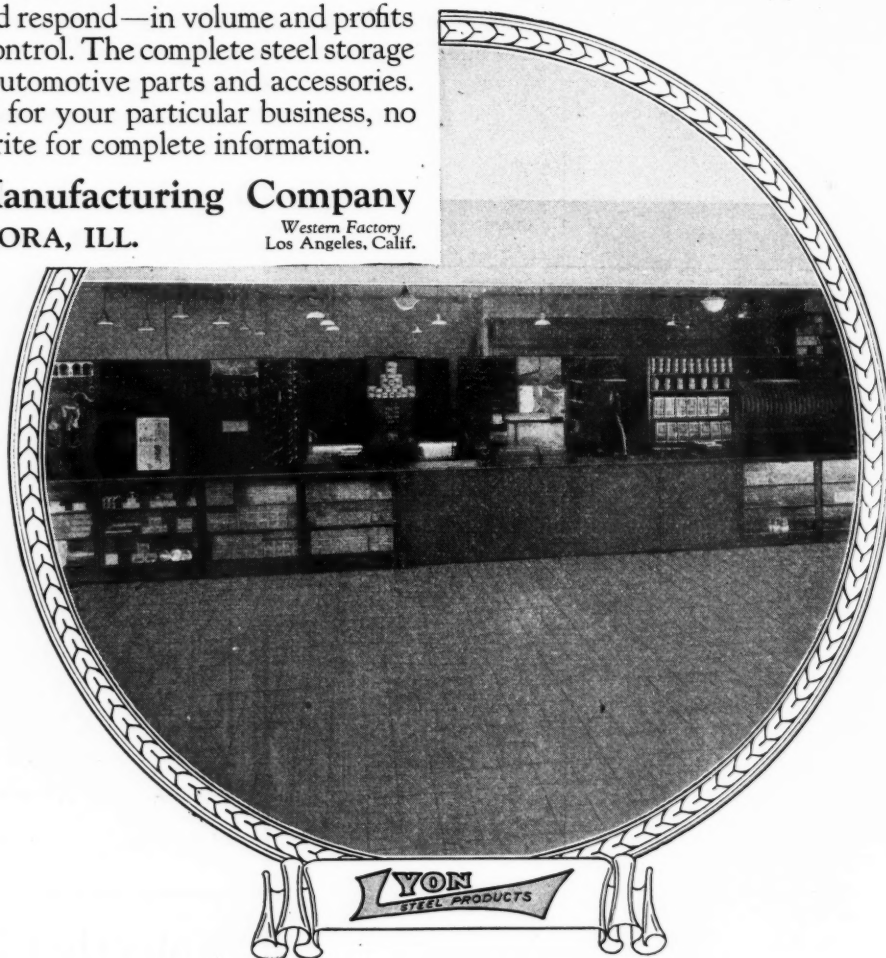
Your own business should respond—in volume and profits—to Lyon Auto Parts Control. The complete steel storage and display system for automotive parts and accessories. There is a Lyon System for your particular business, no matter what its size. Write for complete information.

Lyon Metallic Manufacturing Company

Eastern Factory
Newark, N. J.

AURORA, ILL.

Western Factory
Los Angeles, Calif.



Leading Automotive Jobbers Sell

LYON AUTO PARTS CONTROL

COMPLETE STEEL STORAGE SYSTEMS FOR AUTOMOTIVE PARTS AND ACCESSORIES



Another New Model which is Stimulating Sales for Marmon Dealers

THERE is a brisk Speedster demand; a ravenous appetite for genuine speedsters that look the part, that perform up to their names.

The New Marmon Four-Passenger Speedster more than meets this particular and exacting demand, as every Marmon dealer already knows. It is a most welcome and profitable sales force, proving its advantages right now when the demand for open cars is not yet in full cry.

The new model has all the dash, the high-stepping youthful style that speed-

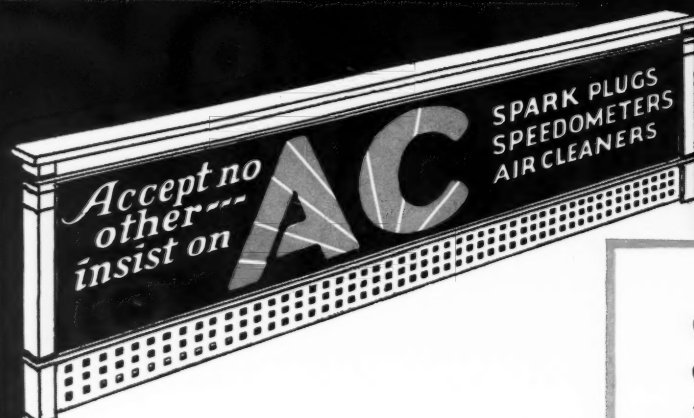
ster fans worship. It lives up to its name in speed, power, nimble-footed reliability. It gives no quarter nor asks it anywhere.

You'll find a lot of profit in open car sales if you have the right fine car models this year. Marmon has its commodious Seven-Passenger Car, its Phaeton for five—its popular Two-Passenger Speedster with Rumble—and now comes this new sales stimulant, the Four-Passenger New Marmon Speedster. No wonder Marmon dealers are cheerful and happy as the "open season" dawns.

MARMON MOTOR CAR COMPANY · INDIANAPOLIS

The **NEW MARMON**

"It's a Great Automobile"



SPARK PLUGS
SPEEDOMETERS
AIR CLEANERS

One hundred and forty-eight different automotive manufacturers seeking reliable and economical operation rely on AC products.

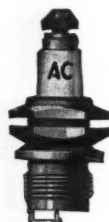
That is the reason for AC's assured market and why they are sold without sales resistance by dealers everywhere.

They are backed by strong advertising and carry a good margin of profit.

AC Spark Plug Company
FLINT, Michigan

AC-SPHINX Birmingham ENGLAND
Makers of AC Spark Plugs AC Speedometers AC Air Cleaners
AC-OLEO Levallois-Perret FRANCE

AC
SPARK PLUGS



THE new AC Spark Plug marks the greatest advance made in spark plug construction in years.

A new design, a new alloy for sparking points, a new electrically fused Kyanite insulator core and a new glaze—in a type and size for every motor.

For Fords there is the famous AC 1075, embodying the above improvements as well as many other special features—and it is now made in both one- and two-piece design.

AC
SPEEDOMETERS

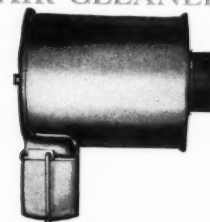


THE AC Speedometer for Fords is of the same high quality as furnished for original factory equipment to the manufacturers of Buick, Cadillac, Chandler, Chevrolet, Chrysler, Gray, Hertz, Oakland, Oldsmobile, Peerless, Pontiac, and GMC trucks.

There is no swivel joint between the front wheel and the instrument—it drives direct—exclusively an AC feature, insuring continuously satisfactory service.

Packed complete with all installation attachments, easily mounted and reasonably priced.

AC
AIR CLEANERS



THE AC Air Cleaner prevents dust from entering the motor through the air intake of the carburetor, thereby eliminating excessive wear on the motor's moving parts. Original factory equipment on Buick, Davis, Hertz, Locomobile "Jr. 8," Oakland, Nash, Stutz, Willys-Knight "6" and Yellow Cab — models available for installation on Chevrolet, Chrysler 4, Dodge Brothers, Ford, Maxwell, Oldsmobile, Star, Studebaker, as well as the 1925 and earlier models of Buick, Nash and Oakland.

Packed complete with all installation attachments, easily mounted and reasonably priced.